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The Influence of the Practical and Applied Arts

by
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This report is a summary of a Master's thesis by Arnold Neufeld, University of Saskatchewan. Read this report to learn more about:

- ✓ the history and influence of the Practical and Applied Arts on comprehensive high school students.
- ✓ reasons for students taking the courses.
- ✓ the current state and future of Practical and Applied Arts in Saskatchewan.
- ✓ the effect the courses had on graduates' career and education choices.
- ✓ recommendations for boards of education.

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INTRODUCTION

The Practical and Applied Arts courses offered at the high school level have often been undervalued by society. When approximately 25% (Saskatchewan Learning, 2004) of the Saskatchewan graduating student body continue their education at a university level we may need to evaluate our current educational emphasis.

The Practical and Applied Arts (PAA) open a door for lifelong learning and should be valued for their educational worth. The nature of the Practical and Applied Arts courses is such that they provide both theoretical and practical applications. The practical approach provides a learning environment that is different from many of the regular compulsory (university-prep) subject areas. This balanced environment in PAA provides a variety of students' learning styles. Further, the Practical and Applied Arts courses expose students to a variety of career types.

A review of the literature indicates that the Practical and Applied Arts is a subject area that has received little attention (Gagel, 2002; Hill & Smith, 1998; Lewis, 1993, 1995, 1999a; Upitis, 2001; Yamazaki & Savage, 2004). To encourage more research in an area that has had limited research in the past can only be positive (Lewis, 1995).

There is demand for skilled trades (Koontz, 2000; Unger, 1992; Lyons, Randhawa, & Paulson, 1991). Currently, the construction industry is in desperate need of skilled employees; there is such a shortage of skilled trades in Canada that companies have to turn to foreign employees. It is estimated that Canada could be short as many as 1,000,000 trained workers in 10 years (CTV News, 2005, January 30).

The Practical and Applied Arts open a door for lifelong learning.

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(Gagel, 2002; Hill & Smith, 1998; Lewis, 1993, 1995, 1999a; Upitis, 2001; Yamazaki & Savage, 2004)

There is demand for skilled trades.

(Koontz, 2000; Unger, 1992; Lyons, Randhawa, & Paulson, 1991)

This document includes the findings of a study (Neufeld, 2006) in which comprehensive high school alumni were surveyed to investigate the influence the Practical and Applied Arts courses had on their career and education choices (in the ten year period after high school graduation). A summary of the research literature associated with Practical and Applied Arts is provided.

PART I: THE INFLUENCE OF THE PRACTICAL AND APPLIED ARTS

The Neufeld (2006) study included a survey where respondents were chosen from two comprehensive high schools in mid-sized Western Canadian cities, who had graduated between 1992 and 1995. One school was a comprehensive high school located in an inner city neighborhood and the other was a comprehensive high school located in a middle class neighborhood. The data for the study was collected by an online questionnaire and analyzed using descriptive statistics. The data provided demographic information, personal information, histories of education and employment, and additional comments. An interpretation panel, modeled from Noonan (2002) comprising seven people from four profiles, was used to interpret and provide meaning to the survey data and relate the survey data to the research questions. The findings from the study have been grouped into themes.

Themes Related to Research Question Number One

Research question number one stated “What is the profile of students who have taken Practical and Applied Arts courses in the comprehensive high schools?” The themes that emerged from this research question included: The type of student enrolled in PAA courses, the difference in use of PAA based on school climate, and practical skills you can use throughout life.

The Type of Student Enrolled in PAA Courses

The type of student enrolled in PAA courses varied. In grade nine all students were required to complete some form of PAA, beyond that it was optional. Both male and female students were enrolled in PAA courses, with males more inclined to take courses which incorporated the use of machines, which was also

Both male and female students were enrolled in PAA courses, with males more inclined to take courses which incorporated the use of machines...

(Neufeld, 2006)

the finding of Autio and Hansen (2002). The overall grade average of respondents in relationship with employment and further education in areas of PAA may suggest that the PAA course are not just for slow learners, a finding also of Gray (2004). The results from Neufeld (2006) showed that it was not just the slow learners or drop outs that were taking PAA courses. Rather, students with a wide range of academic levels were enrolled in these courses.

It was not just the slow learners or drop outs that were taking PAA courses.

(Neufeld, 2006)

The Difference in Use of PAA Based on School Climate

The difference in use of PAA based on school climate varied from course to course, however, observation of all PAA courses found only small variations between the two schools. This is contrary to the finding of Levesque (2003b) who discovered disadvantaged students were more likely to participate in vocational/technical education courses. However, the difference between the two schools showed survey respondents from the inner city comprehensive high school as the only ones obtaining journey status and more frequently enrolled in career and work exploration courses. In comparison, the survey respondents from the middle class comprehensive high school more frequently enrolled in graphic arts. The students from the middle class comprehensive high school were the only respondents reporting self-employment. Numbers are small in all cases, thus no conclusions could be drawn. However, the results indicated that socio-economic class might play a role.

Practical Skills You Can Use Throughout Life

The profile of respondents indicated that the skills learned in the PAA courses were viewed as useful throughout life. If a student did not use the PAA courses directly in their area of education or employment the skills learned in the areas may still be beneficial to them. They may use the knowledge learned as a

...the skills learned in the PAA courses were viewed as useful throughout life.

(Neufeld, 2006)

hobby or the related skills may apply to other areas of education or employment.

Themes Related to Research Question Number Two

Research question number two stated “What percentages of surveyed students who graduated 10 or more years ago from comprehensive high schools went on to university and/or SIAST or similar post secondary educational facilities?” The survey data indicated that respondents continued education in the following areas: Journey status, three (3.5%); SIAST or similar, 13 (15%); College, 11 (13%); University, 63 (73%); and other, 12 (14%).

The survey data indicated that 37% of survey respondents indicated either working or taking further education in areas related to PAA. The interpretation panel viewed this as important since the majority of surveyed respondents indicated high academic averages. Thus, PAA courses are not designed for drop outs and slow learners as Gray (2004) suggested. The themes that emerged from this research question included: The role of PAA in post-secondary education, and the role of PAA in employment.

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(Neufeld, 2006)

The Role of PAA in Post-Secondary Education

The PAA courses were identified to contribute to post-secondary education in many ways. The survey results showed that PAA courses provide experience and exposure in career related fields, which may lead to further education in a related area; which were goals described by Lynch (2000) and Lewis (1998). PAA courses generate more effort and a desire to learn because students are interested in the courses, which may provide motivation to pursue further learning. It was also observed that PAA courses act as a starting point for future learning. The PAA courses are applications of other subject areas that students take. Whatever the level of exposure to PAA courses is, all panel participants and many survey respondents believe the courses benefit all students.

PAA courses generate more effort and a desire to learn because students are interested in the courses, which may provide motivation to pursue further learning.

(Neufeld, 2006)

The Role of PAA in Employment

The role of the PAA courses in employment would be very similar to the role that they serve the students who pursue post-secondary education. Employment involves varying forms of further education, both formal and informal. Some of the PAA courses provide on the job experience in a job setting through the career and work exploration course or as a work study component of a PAA course. The awareness of various trades and a combination of both theory and hands-on experience in these courses simulate real-life experiences for students.

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(Neufeld, 2006)

Themes Related to Research Question Number Three

Research question number three stated “To what extent did the Practical and Applied Arts subjects influence students’ future career choices?” The themes that emerged from this research question included: exposure and experience, hands-on learning approach, and builds confidence.

Exposure and Experience

The PAA courses provide exposure to a different learning style (one which incorporates theory with practical applications) and possible career options. The ability to experience these varied career options was viewed as necessary for all students, at the high school level. The exposure to PAA courses may help students experience what some of the different careers involve, that are available to them after high school graduation, and this would be supported by Lynch (2000) and Lewis (1998). Exposure to a wide range of these PAA courses assists students in finding their strengths and weaknesses.

The PAA courses provide exposure to a different learning style and possible career options.

(Neufeld, 2006)

Hands-On Learning Approach

The hands-on learning approach of PAA courses appeals to many students. Similar to the finding of Upitis (2001), survey

respondents and the interpretation panel believed the ability to have education with a hands-on component was desirable for students. Neufeld (2006) revealed that this approach is not restricted to slower learners or students that “struggled” in high school.

Builds Confidence

It was believed that if a student did not experience success in regular courses but did excel in areas which had a practical component he/she may experience an increase in confidence. This increased confidence in a school subject area may lead to further education in that area and motivation to work harder in other areas; this was also the finding of Hardy (2000).

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(Neufeld, 2006)

General Themes

The general themes that emerged from Neufeld (2006) included: Why wouldn't you take PAA courses?, PAA courses can..., PAA courses are..., Life long learning, Literacy for life, and Issues related to PAA courses.

Why Wouldn't You Take PAA Courses?

The research indicated there were societal and parental pressures for students to attend university. Survey respondents and panel participants believed that high school is geared towards students continuing their education at a university level. This was described by an interpretation panel member as being the case where the push was to go to university and that was not where his/her area of interest was. There was also a comment that there is too much emphasis on math and the science courses.

...there were societal and parental pressures for students to attend university.

(Neufeld, 2006)

The PAA courses are often viewed as “blue collar work”. It was viewed that society does not value this type of education or work. As a result, students are not encouraged to take these courses.

PAA Courses Can...

The PAA courses were found not only to give students exposure to varied careers but also to provide options. These experiences may lead to possible future employment. This opportunity to experience different types of jobs was viewed as valuable. It was believed that if students were not exposed to these learning opportunities through the PAA courses they may not experience these areas later in life.

The PAA courses may be used in the form of a hobby or as something to fall back on later in life. This is something the literature did not discuss but was discussed by the panel as a benefit of the PAA courses. It was believed that if students are exposed to areas of PAA at a young age it may be easier to attract them to the areas. Respondents believed the PAA courses influence future career decisions and have helped some students stay in school.

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(Neufeld, 2006)

PAA Courses Are...

The PAA were viewed by survey respondents and interpretation panel participants to be: more exciting than regular subjects; interesting; fun; practical; captivating students' attention; confidence building; absolutely necessary; hands-on; an alternative to compulsory subjects; relevant to real life; providing a practical approach to education; suitable for males and females; generating more effort and a desire to learn; providing experience and exposure; practical applications of other courses; and, an alternate form of learning for students who do not excel in the regular classroom setting. These views were also evident in the literature search.

The PAA were described as a starting point for future learning.

(Neufeld, 2006)

Life Long Learning

The PAA were described as a starting point for future learning. They were viewed as providing practical life skills for a

whole life. The knowledge learned can be applied to other areas (education, leisure, and career oriented). The PAA courses were described as increasing experience and reinforcing knowledge.

The knowledge learned [in PAA] can be applied to other areas.

Literacy for Life

(Neufeld, 2006)

The PAA were found to involve various forms of communication. Survey respondents, supported by the interpretation panel participants, believed that literacy goes beyond reading and writing. The interpretation panel found that technological literacy played a role in the PAA courses. The PAA courses enable students to learn something else easier. Students in PAA courses may be influenced to read more since they enjoy or are interested in the area. Survey respondents and interpretation panel participants believed the PAA courses may serve to keep students in school, if this is the case then students will also be learning in their other courses.

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(Neufeld, 2006)

Issues Related to PAA Courses

There are several issues related directly or indirectly to the PAA courses. The interpretation panel identified the inability to hire employees with trade experience. The fact that there are few journey persons indicates that there is a need for skilled trades persons.

Many survey respondents and members of the interpretation panel believed that all students should complete some form of PAA education or at least be exposed to PAA education (Neufeld, 2006).

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The interpretation panel believed the knowledge learned in PAA courses is not valued by society. This was also the belief of Lewis (1993), who believed “the practical arts have languished because as a class they do not conform to the traditional view of what constitutes valid knowledge” (p. 175).

(Neufeld, 2006)

The belief was that failure for PAA courses to be awarded greater merit is attributed to the lack of research, and acknowledgment of PAA as valuable learning (Neufeld, 2006).

Detailed information about the process and results of this study may be found in Neufeld (2006).

PART II: THE LITERATURE RELATED TO PRACTICAL AND APPLIED ARTS

There is not a great deal of current information published about the Practical and Applied Arts (Lewis, 1999a; Reed, 2002). Since Practical and Applied Arts is more of a Canadian term several other terms that were either related to, or a former reference of PAA were included in the literature search. They included: Industrial Arts, Technical Education, Technology Education, Vocational Education, Comprehensive High Schools, and (Technological) Literacy.

There is not a great deal of current information published about the Practical and Applied Arts.

(Lewis, 1999a; Reed, 2002)

History of Practical and Applied Arts in Canada

Formal vocational education in Canada dates back to the late 1700s. In Saskatchewan, vocational or technical education dates back to 1884, when Father Lebret established an industrial school for Indians, near Qu'Appelle (Young & Machinski, 1972). In 1905 Saskatchewan became a province, and then assumed the responsibility for its own vocational training programs.

The terms vocational education and technical education have been used interchangeably for the past 50 years. Vocational education was described as specific preparation for employment. Technical education was described as similar to vocational education with more emphasis on theoretical content (Young, 1992).

Historically, various Acts have been passed throughout the years to address issues related to technical and vocational education (Young & Machinsky, 1972-1973).

After the Second World War, two forms of technical and vocational facilities emerged in Saskatchewan, composite and comprehensive high schools. The composite high schools were

developed prior to the comprehensive high schools (Saskatchewan Education, 1987).

Saskatchewan Education (1987) stated:

The concept of the composite high school was based upon the belief that it is the democratic right of students to have equal opportunity while in school for preparation for life beyond school, whether it be for entering the professions, the home, the farm, the business, or skilled trades. (p. 27)

A composite high school was not considered a vocational school. The composite education offered a well-balanced academic and technical program. Composite high schools were viewed as “able to lay broad, solid foundations in the various technical fields, making the transition from school to work place more positive and easier” (Saskatchewan Education, 1987, p. 27). Composite high schools were no different in kind from any other high school; they had their logistical issues, since not all high schools were composite.

The *Technical Vocational Training Assistance Act* (1960) brought resurgence to vocational education and began the development of comprehensive high schools (Saskatchewan Education, 1987).

The comprehensive high schools were designed to offer a wide variety of courses, to meet the needs and interest of all students. “It was the responsibility of these schools to provide a common core for all students and, as well, provide a wide range of electives that would ensure the optimum development of every high school student” (Saskatchewan Education, 1987, p. 28). In Saskatchewan there are currently 16 comprehensive high schools.

The history of Practical and Applied Arts in Saskatchewan evolved in 1987; the Department of Education, Advanced Education and Manpower, and Saskatchewan Library were

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(Saskatchewan Education, 1987)

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assumed under the Department of Education, that is now Saskatchewan Learning (Young, 1992).

Lyons et al. (1991) explored the roots of Canadian prejudice against vocational education. They stated:

Canadians have historically considered vocational education to be preparation for second-class citizenship. Until recently, we did not treat domestic programs for training highly skilled workers as vital to the nation's interest. Whereas European countries had programs to prepare craftspeople for skilled trades, Canada relied on immigration to fill these jobs. (p. 137)

Canadians have historically considered vocational education to be preparation for second-class citizenship.

Lyons et al. (1991) argued that Canada needs to encourage students to see “vocational education as challenging and worthwhile” (p. 149). If we can achieve this, then we are making a positive step towards the future. “There is today more need than ever for timely information, co-ordination, and co-operation among government, industry, and labour to create and to modify a unitary industrial development strategy” (p. 146).

(Lyons et al., 1991)

From this historical view, it would seem the governments (Federal and Provincial) fund vocational education only in times of shortfalls of skilled trades' workers. Further, the Practical and Applied Arts are seen as job preparation courses, without value beyond preparation for work.

Need for Tertiary Education Including Practical and Applied Arts

Castellano, Stringfield, and Stone (2003) discovered “that failure to get at least a high school diploma creates increasingly high hurdles for young people seeking economic sufficiency in adulthood” (p. 4). They believed “school and district personnel are forced to make major programmatic decisions in the absence of replicating studies or, often, any process or outcome studies to inform their thinking” (p. 232).

...failure to get at least a high school diploma creates increasingly high hurdles for young people seeking economic sufficiency in adulthood.

(Castellano, Stringfield, and Stone, 2003)

Koontz (2000) described:

Advances in technology and growing international economic competition have greatly increased the nationwide demand for highly skilled workers. The growing gap between the skills of the American workforce and the technical requirements of today's jobs have re-emphasized the need to transform America's educational system to provide the solid academic and technical skills required by the jobs of today and tomorrow...The fact is, careers requiring technical skills comprise the largest percentage of available employment in our economy. These careers offer high pay and will make up 65 percent of available jobs as of this year, according to the Bureau of Labor skills...Other national statistics show that only 20-25 percent of high school graduates complete a four-year degree, which parallels the 20 percent required by professional labor. Yet by some estimates we spend about 75 percent of our combined local, state, and federal public education resources on this minority of students. (p. 1-2)

The fact is, careers requiring technical skills comprise the largest percentage of available employment in our economy.

(Koontz, 2000)

Since this is the case we must do what we can to improve the image of the PAA.

Koontz (2000) stated "the image of a precision machinist to a mother is not one she typically wants her son or daughter involved with. In addition, school counselors tell our youth to avoid manufacturing as a career" (p. 3). In order to avoid this negative bias "we must change the way we market this subject area as well as the content of the curriculum, so that we may meet current needs of entry level skill sets" (p. 3).

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Mupinga and Livesay (2004) stated "in an era when the highest paying and most readily available jobs seem to be in the technical and medical arenas, it may not be worth initially pursuing a four-year degree when a one or two-year program will do" (p. 1). We want our population to be educated, however, "unless a student is preparing for a career as a lawyer or physician, which absolutely require advanced degrees, it is foolish for students and parents not to seriously research vocational-technical options" (p. 3). Unger (1992) agreed and made four points: There are greater costs

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(Mupinga and Livesay, 2004)

incurred with a university education versus a skilled trade; there is societal need for the trades; there are many areas of employment where the skills are learned on the job; education is important, however, a person should not attend post-secondary education simply because of the expectations of others.

Statistically, Unger (1992) found that 50% of students at four-year colleges and universities in the United States quit without ever graduating, which he attributed partially to social pressures to attend institutions they had no interest in. In Canada, Trinity Western University calculated an attrition rate of approximately 30% among first-year students. Research at Trent University indicated “40 percent of the students who enroll at a university will complete their degree there. Some drop out, others transfer to another school, some finish their degree at a later date” (Matusky, 2001, p. 20). Given the various enrolment, transfer, and dropout patterns of students it is difficult to establish precise university participation rates. However, “The 2002-03 university participation rates among 18- to 21-year-olds in Saskatchewan was 20.5%, and the corresponding Canadian rate was 19.7%” (Canada Millennium Scholarship Foundation, 2006, ¶ 34).

Lewis (1993) described how the practical arts have struggled to be recognized as valid knowledge and find a place in the curriculum. He stated “the practical arts have languished because as a class they do not conform to the traditional view of what constitutes valid knowledge” (p. 175).

The common theme is that the Practical and Applied Arts are undervalued by society, and by schools. Yet, there is also a feeling that we are not reaching our potential in our high school curriculum. We need to develop a curriculum that is relevant to our student body, such that students have a sense of gratification in their studies, and then they may prosper in their quest for

...the practical arts have languished because as a class they do not conform to the traditional view of what constitutes valid knowledge.

(Lewis, 1993)

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knowledge. The PAA offers this because the hands-on component of these areas make it useful and challenging to students and thus it is a tool to promote such areas as, literacy, numeracy, and cognition. Unfortunately, as Lewis (1993) points out:

In the secondary schools, the liberal curriculum has become an efficient, convenient way to sort children for their roles in society. Those who apparently cannot cope with this curriculum – who cannot pass the attendant examinations – have the practical arts school subjects as their alternative. (p. 197)

In the secondary schools, the liberal curriculum has become an efficient, convenient way to sort children for their roles in society.

(Lewis, 1993)

Reasons for Practical and Applied Arts at High School

The reasons for students taking PAA courses seem to fall into three categories: for utilitarian purposes; the concept of keeping students in school; and, problem solving, cognition, critical and creative thinking, and enjoyment. The fact is both boys and girls do well in PAA courses.

Lyons et al. (1991) discovered vocational education has been perceived as “preparation for second-class citizenship” (p. 137) despite the need for skilled trade workers. Lewis (1995) noted that the knowledge learned in technical education tends not to be considered knowledge and it is difficult to convince the public that the underlying value of technical education is academic. It has also been indicated that students attending technical/trade programs will, in less time and at less cost to them, be more likely to find employment than university grads (Mupinga & Livesay, 2004; Unger, 1992).

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(Mupinga & Livesay, 2004;
Unger, 1992)

Hardy (2000) evaluated the experiences of vocational education and training students in their last year of high school. He discovered the confidence of students, acquired through learning in PAA courses, stimulated many to pursue further education and training in PAA related areas. Analysis of the research showed students’ work experiences were similar to their classroom experiences “this demonstrates that their transition to the labor

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(Hardy, 2000)

market is really begun during the course of their studies, and continues within the workforce” (p. 17).

The need for PAA courses has been established. There is demand for jobs requiring skills, which may suggest more emphasis on PAA courses. In order to achieve this we would have to get rid of the societal view associated with many of the PAA courses and related employment. Not all students require a university degree, because we will always have demand for a large percentage of jobs that do not require a university degree. There are social pressures for students to go to university; however, students should not go to university just because other people want them to.

Gray (2004) believed there are many stereotypes about Career and Technical Education (CTE) commenting “at the local level most high school principals readily admit that, without Career and Technical Education, their schools would have little to offer many students” (p. 2). The view is that CTE only prepares students how to get a job, it is designed for only male students, minorities, slower learners, and those destined for ‘dead-end jobs’. However, CTE is not designed for just potential drop outs and slow learners, but rather for some, “the lack of an alternative to strict academics is one reason why most dropouts choose to leave school in the first place” (p. 7).

Gagel (2002) described Technology as commonly associated with tools, and literacy with reading and writing. He suggested “technology should be cast in a more universal, literacy-oriented setting, Technological literacy” (p. 4). Although people view the technologies as an area that requires little literacy, technology actually enhances and promotes literacy, indicating that more research is required before technological literacy can be measured accurately.

... without Career and Technical Education, their schools would have little to offer many students.

(Gray, 2004)

... the lack of an alternative to strict academics is one reason why most dropouts choose to leave school in the first place.

(Gray, 2004)

According to Hill and Smith (1998), it is difficult to motivate students in many subject areas. “However, in the project-based classes, students demonstrated high levels of involvement and activity with their work” (p. 8). They found that students rarely ever skipped the class.

Yamazaki and Savage (2004) discovered “The impact of discoveries, inventions, and creative developments in science, mathematics, and technology is apparent in practically all spheres of life, but these fundamental fields of human inquiry and action often play an ambiguous role in education” (p. 1).

Upitis (2001) discovered that students enjoyed project-based units and had a “sense of pride” from creating with their hands.

Despite the inferior status of PAA, the PAA courses provide thinking (problem solving), hands-on opportunities and enjoyment (Upitis, 2001; Gagel, 2002; Hill & Smith, 1998; Castellano et al., 2003).

Most of the research in PAA argues for its purpose of filling society’s need and preparing students for the world of work. However, research investigating student involvement in PAA indicates the courses: are challenging and enjoyable; promote broad literacy; keep students in school, who might otherwise drop out. Given the limited research in PAA there is a need to establish the true educational potential of the PAA courses.

The State of Practical and Applied Arts in Saskatchewan

In 1987, the *Report of the Technical-Vocational Education/Comprehensive High Schools Review Committee* developed by a collection of people from government, post secondary education, School Trustees Associations, and the Saskatchewan Teachers’ Federation, developed a list of some thirty two recommendations for secondary schools in

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(Yamazaki & Savage, 2004)

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(Upitis, 2001; Gagel, 2002; Hill & Smith, 1998; Castellano et al., 2003)

Saskatchewan. Some of the recommendations have been carried out and some continue to be worked on.

The quantity or extent to which any or all of the PAA areas are offered is dependent on the school, population, geographic location, access to finances, and the availability of qualified instructors. At the secondary level pure courses and survey courses are available from grades nine through twelve. Pure courses consist of modules taught in one subject area. Survey courses comprise a minimum of three areas in PAA. In Saskatchewan a student is required to have completed 150 hours in PAA by completion of grade nine (Saskatchewan Learning, 2003). At the grade 10, 11, and 12 level the PAA courses may be taken as electives.

The quantity or extent to which any or all of the PAA areas are offered is dependent on the school, population, geographic location, access to finances, and the availability of qualified instructors.

The Future of Practical and Applied Arts

The histories of PAA (Young, 1992) indicate PAA courses are promoted only when skilled trades persons are needed. Yet, we know many students enjoy PAA. They develop practical and cognitive skills through their PAA courses. Would students drop out of school if PAA courses were not available? Perhaps PAA should be promoted not just in times of shortage of skilled trades workers (such as now) but always, because the courses influence student enjoyment, thinking, and broad based literacy.

... PAA courses are promoted only when skilled trades persons are needed.

(Young, 1992)

The literature suggests that societal perceptions of PAA interfere with the offering of PAA courses (Lewis, 1999a, 1999b, 1998, 1995, 1993; Koontz, 2000). We must change social attitudes towards PAA because it is an area of education that benefits many students. Petrina (2000) believed that “without shop work, critical practices in the schools smack of a cultural elitism” (p. 200).

...without shop work, critical practices in the schools smack of a cultural elitism...

(Petrina, 2000)

Hansen and Reynolds (2004) found that university faculty perceived “In 20 years, the K-12 ITE [Industrial Technology Education] curriculum will reflect society: understanding alternative energy and advanced technologies; becoming aware of

In 20 years, the K-12 ITE curriculum will reflect society.

(Hanson & Reynolds, 2004)

technological implications; and the corporate sector's need for problem solving, planning, and spreadsheet skills will be needed both in society and in the classroom" (p. 8). As well, educators would continue to attract students to these areas and the term "industrial" would be removed from these programs.

In a report on the vocational/technical course taking, in the public high school education of the United States, Levesque (2003a) found that, in 1998, 96.5 percent of graduates had taken at least some credits in vocational/technical education. Levesque (2003b) discovered disadvantaged students were more likely to participate in vocational/technical education courses. In Saskatchewan, high school students typically spend "almost 20 percent of their course time on practical and applied arts" (Saskatchewan Learning, 2004, p. 68).

Throughout the history of education there have been new approaches to the PAA courses. However, each of these approaches has encountered implementation difficulties. Petrina and Dalley (2003) looked at the politics of curriculum reform in British Columbia. Technology education initially came into existence as Manual Training in the early 1900s. In 1925, the name was updated to Industrial Arts . In the 1970s the name was changed to Industrial Education. In the 1980s the name was changed to Technology Education. In 1987, as a status issue, Technology Education, Physical Education, Business Education, and Home Economics were grouped into the Practical Arts. The change was supposed to represent a shift from industrial production to technological problem solving, and provide for a literacy that equally served academic preparation, citizenship, leisure, and work. However, two thirds of the teachers rejected the change. The result was really only a name change because the teachers kept on teaching the same Industrial Education courses.

*In Saskatchewan,
high school students
typically spend
"almost 20 percent of
their course time on
practical and applied
arts"*

(Saskatchewan Learning,
2004)

So, there really was no reform at all. Although their study was based in BC it describes the politics of curriculum reform everywhere.

In a study on technology education in New Zealand, Jones and Moreland (2002) found that students need to develop an understanding of the principles underlying technological development. They also noted that it was important for students to have an understanding of a range of technologies and be able to relate to the way they operate and function. Jones & Moreland stated:

For a new curriculum to be introduced and be sustainable a strong emphasis needs to be placed on a coherent and long-term research and development program that is then able to inform classroom practice. Curriculum implementation requires informed teachers who are able to develop sustainable programs in order to enhance student learning in technology. (2002, p. 4)

Volk (1996) attempted to clarify arguments for and against industrial arts. Although there was a transformation from the name “industrial arts” to “technology education” there was confusion in the eye of the public as to the meaning of the term “technology education”. Sanders (2001), found that far too often people associate technology with computers. Although computers are a form of technology they are not the basis of technology education.

Lewis (1998) argued for consideration of vocational education as general education where “all students would have equal chances of engaging in a breadth of studies supportive of wide-ranging vocational insight” (p. 283). His view was that all students should be exposed to vocational education, regardless of color or class.

Lewis stated:

So long as the tight connection between curriculum, race, ethnicity, class, and opportunity remains, vocational

Curriculum implementation requires informed teachers who are able to develop sustainable programs in order to enhance student learning in technology.

(Jones & Moreland, 2002)

... far too often people associate technology with computers.

(Sanders, 2001)

... all students would have equal chances of engaging in a breadth of studies supportive of wide-ranging vocational insight.

(Lewis, 1998)

education will continue to be tied to blue-collar work only, and schools will go on pretending that what they purvey in the academic curriculum is somehow transcendent, even though much of it is the knowledge that employers crave. (p. 305)

Attempts have been made to expand PAA beyond job skills to support literacy and problem solving. However, as with all curricular revisions there is resistance to change. Much resistance comes from society's beliefs about the value of PAA.

The Need for More Research

After examining research on technology education Lewis (1999a) argued that more research was needed and it must take place in the classroom. He believed "research is an important way in which the field of technology education can become further established" (p. 1). He discovered "topic areas that had received little attention included problem solving, cognition, instructional methods and strategies, and technological literacy" (p. 1). Lewis believed there is a lack of study in the area of PAA because "little is known about the pragmatics of the curriculum change process. What the change from industrial arts to technology education entails in actual schools or school districts has been studied very little" (p. 8).

Bordt, de Broucker, Read, Harris, and Zhang (2001) found that the federal government has made a commitment to increase funding into research and development in an attempt to make Canada one of the top five countries in research and development by 2010. Further, they found:

The Survey of Innovation, Advanced Technologies and Practices in the Construction and Related Industries shows a shortage of skilled workers to be the most prominent obstacle to using new and better building products, building systems and construction equipment. The shortages identified were most likely in the skilled trades. (Bordt et al., 2001, p. 8)

...all students should be exposed to it [vocational education], regardless of color or class.

(Lewis, 1998)

...topic areas that had received little attention included problem solving, cognition, instructional methods and strategies, and technological literacy.

(Lewis, 1999a)

... a shortage of skilled workers to be the most prominent obstacle...

(Bordt et al., 2001)

However, would the promotion of education in Practical and Applied Arts courses lead to increased numbers of students choosing careers in skilled trades?

The research suggests that further research may discover that the PAA courses in fact provide: problem solving, cognition, opportunities for engaging, and technological literacy to all students.

... further research may discover that the PAA courses in fact provide: problem solving, cognition, opportunities for engaging, and technological literacy to all students

PART III: RECOMMENDATIONS AND CONCLUDING REMARKS

Part III provides recommendations for future research, and concludes this report.

Recommendations for Boards of Education

The results of this research have led to numerous recommendations. The recommendations are as follows:

1. There is need for follow up research to establish the influence of courses offered to students in our educational system while the students are taking these courses.
2. Research should be conducted to compare the outcome of student education and employment from both comprehensive and non-comprehensive high schools.
3. Saskatchewan Learning should make provisions to survey all graduates to determine what happens to them (career and educationally) after high school.
4. Research should explore the negative view towards “blue collar” work to see what improvements could be made to validate Practical and Applied Arts courses as valid knowledge.
5. Boards of Education need to evaluate existing curricular programming to see how they can incorporate the Practical and Applied Arts courses into the daily education of our students.
6. Boards of Education need to allocate additional funds and personnel to the implementation of PAA programming.

Concluding Remarks

The PAA courses were found to cater to a wide range of academic achievement and not just to “slow learners” or “at-risk” students, as some may think.

High school Practical and Applied Arts courses have influenced students’ life long learning by providing exposure to different forms of learning. The Practical and Applied Arts courses provide hands-on experiences involving problem-solving, literacy, numeracy, and cognition which can only promote students’ literacy for life. There is a need for more research into the Practical and Applied Arts to demonstrate the benefits from this area of instruction.

The Neufeld (2006) study showed valuable information relevant to the role of the PAA courses. The difference in use of PAA based on school climate varied from course to course, however, observation of all PAA courses found only small variations between the two schools. There was evidence that survey respondents selected different courses based on gender. The profile of students who have taken Practical and Applied Arts courses in the comprehensive high schools were described as having overall high grade averages, which was contrary to the view of society. Respondents not using the knowledge learned in the PAA courses still saw their value and often used those skills later in life.

The PAA courses served as a stepping-stone to both post-secondary education and employment. The Practical and Applied Arts subjects provided exposure and experience to various career related courses. The hands-on learning approach incorporates theory with a practical component. The nature of the PAA courses is such that they provide life long learning skills. The exposure to these courses attributes to the literacy of the student.

The PAA courses were found to cater to a wide range of academic achievement and not just to “slow learners” or “at-risk” students, as some may think.

(Neufeld, 2006)

The nature of the PAA courses is such that they provide life long learning skills.

The literature told us that the Practical and Applied Arts courses have historically been funded based on industrial crises. The cyclical effect of supplying skilled trades workers in times of need may be reduced by a change in the societal image of the trades. Many students who have graduated who go on to university have often done so because of societal and parental pressures, instead of personal interest.

In the future there will still be issues related to PAA courses. The current issue is that the PAA courses have not been valued by society when there is such a shortage of skilled trades workers in our country. Although the PAA courses are not designed to create trades people, they do provide exposure and experience to some of the trade related areas.

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The Influence of the Practical and Applied Arts

by
Arnold Neufeld

This report is a summary of a Master's thesis by Arnold Neufeld, University of Saskatchewan. Read this report to learn more about:

- ✓ the history and influence of the Practical and Applied Arts on comprehensive high school students.
- ✓ reasons for students taking the courses.
- ✓ the current state and future of Practical and Applied Arts in Saskatchewan.
- ✓ the effect the courses had on graduates' career and education choices.
- ✓ recommendations for boards of education.

Research Report #07-03

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INTRODUCTION

The Practical and Applied Arts courses offered at the high school level have often been undervalued by society. When approximately 25% (Saskatchewan Learning, 2004) of the Saskatchewan graduating student body continue their education at a university level we may need to evaluate our current educational emphasis.

The Practical and Applied Arts (PAA) open a door for lifelong learning and should be valued for their educational worth. The nature of the Practical and Applied Arts courses is such that they provide both theoretical and practical applications. The practical approach provides a learning environment that is different from many of the regular compulsory (university-prep) subject areas. This balanced environment in PAA provides a variety of students' learning styles. Further, the Practical and Applied Arts courses expose students to a variety of career types.

A review of the literature indicates that the Practical and Applied Arts is a subject area that has received little attention (Gagel, 2002; Hill & Smith, 1998; Lewis, 1993, 1995, 1999a; Upitis, 2001; Yamazaki & Savage, 2004). To encourage more research in an area that has had limited research in the past can only be positive (Lewis, 1995).

There is demand for skilled trades (Koontz, 2000; Unger, 1992; Lyons, Randhawa, & Paulson, 1991). Currently, the construction industry is in desperate need of skilled employees; there is such a shortage of skilled trades in Canada that companies have to turn to foreign employees. It is estimated that Canada could be short as many as 1,000,000 trained workers in 10 years (CTV News, 2005, January 30).

The Practical and Applied Arts open a door for lifelong learning.

...Practical and Applied Arts is a subject area that has received little attention.

(Gagel, 2002; Hill & Smith, 1998; Lewis, 1993, 1995, 1999a; Upitis, 2001; Yamazaki & Savage, 2004)

There is demand for skilled trades.

(Koontz, 2000; Unger, 1992; Lyons, Randhawa, & Paulson, 1991)

This document includes the findings of a study (Neufeld, 2006) in which comprehensive high school alumni were surveyed to investigate the influence the Practical and Applied Arts courses had on their career and education choices (in the ten year period after high school graduation). A summary of the research literature associated with Practical and Applied Arts is provided.

PART I: THE INFLUENCE OF THE PRACTICAL AND APPLIED ARTS

The Neufeld (2006) study included a survey where respondents were chosen from two comprehensive high schools in mid-sized Western Canadian cities, who had graduated between 1992 and 1995. One school was a comprehensive high school located in an inner city neighborhood and the other was a comprehensive high school located in a middle class neighborhood. The data for the study was collected by an online questionnaire and analyzed using descriptive statistics. The data provided demographic information, personal information, histories of education and employment, and additional comments. An interpretation panel, modeled from Noonan (2002) comprising seven people from four profiles, was used to interpret and provide meaning to the survey data and relate the survey data to the research questions. The findings from the study have been grouped into themes.

Themes Related to Research Question Number One

Research question number one stated “What is the profile of students who have taken Practical and Applied Arts courses in the comprehensive high schools?” The themes that emerged from this research question included: The type of student enrolled in PAA courses, the difference in use of PAA based on school climate, and practical skills you can use throughout life.

The Type of Student Enrolled in PAA Courses

The type of student enrolled in PAA courses varied. In grade nine all students were required to complete some form of PAA, beyond that it was optional. Both male and female students were enrolled in PAA courses, with males more inclined to take courses which incorporated the use of machines, which was also

Both male and female students were enrolled in PAA courses, with males more inclined to take courses which incorporated the use of machines...

(Neufeld, 2006)

the finding of Autio and Hansen (2002). The overall grade average of respondents in relationship with employment and further education in areas of PAA may suggest that the PAA course are not just for slow learners, a finding also of Gray (2004). The results from Neufeld (2006) showed that it was not just the slow learners or drop outs that were taking PAA courses. Rather, students with a wide range of academic levels were enrolled in these courses.

It was not just the slow learners or drop outs that were taking PAA courses.

(Neufeld, 2006)

The Difference in Use of PAA Based on School Climate

The difference in use of PAA based on school climate varied from course to course, however, observation of all PAA courses found only small variations between the two schools. This is contrary to the finding of Levesque (2003b) who discovered disadvantaged students were more likely to participate in vocational/technical education courses. However, the difference between the two schools showed survey respondents from the inner city comprehensive high school as the only ones obtaining journey status and more frequently enrolled in career and work exploration courses. In comparison, the survey respondents from the middle class comprehensive high school more frequently enrolled in graphic arts. The students from the middle class comprehensive high school were the only respondents reporting self-employment. Numbers are small in all cases, thus no conclusions could be drawn. However, the results indicated that socio-economic class might play a role.

Practical Skills You Can Use Throughout Life

The profile of respondents indicated that the skills learned in the PAA courses were viewed as useful throughout life. If a student did not use the PAA courses directly in their area of education or employment the skills learned in the areas may still be beneficial to them. They may use the knowledge learned as a

...the skills learned in the PAA courses were viewed as useful throughout life.

(Neufeld, 2006)

hobby or the related skills may apply to other areas of education or employment.

Themes Related to Research Question Number Two

Research question number two stated “What percentages of surveyed students who graduated 10 or more years ago from comprehensive high schools went on to university and/or SIAST or similar post secondary educational facilities?” The survey data indicated that respondents continued education in the following areas: Journey status, three (3.5%); SIAST or similar, 13 (15%); College, 11 (13%); University, 63 (73%); and other, 12 (14%).

The survey data indicated that 37% of survey respondents indicated either working or taking further education in areas related to PAA. The interpretation panel viewed this as important since the majority of surveyed respondents indicated high academic averages. Thus, PAA courses are not designed for drop outs and slow learners as Gray (2004) suggested. The themes that emerged from this research question included: The role of PAA in post-secondary education, and the role of PAA in employment.

...37% of survey respondents indicated either working or taking further education in areas related to PAA.

(Neufeld, 2006)

The Role of PAA in Post-Secondary Education

The PAA courses were identified to contribute to post-secondary education in many ways. The survey results showed that PAA courses provide experience and exposure in career related fields, which may lead to further education in a related area; which were goals described by Lynch (2000) and Lewis (1998). PAA courses generate more effort and a desire to learn because students are interested in the courses, which may provide motivation to pursue further learning. It was also observed that PAA courses act as a starting point for future learning. The PAA courses are applications of other subject areas that students take. Whatever the level of exposure to PAA courses is, all panel participants and many survey respondents believe the courses benefit all students.

PAA courses generate more effort and a desire to learn because students are interested in the courses, which may provide motivation to pursue further learning.

(Neufeld, 2006)

The Role of PAA in Employment

The role of the PAA courses in employment would be very similar to the role that they serve the students who pursue post-secondary education. Employment involves varying forms of further education, both formal and informal. Some of the PAA courses provide on the job experience in a job setting through the career and work exploration course or as a work study component of a PAA course. The awareness of various trades and a combination of both theory and hands-on experience in these courses simulate real-life experiences for students.

Some of the PAA courses provide on the job experience in a job setting through the career and work exploration course or as a work study component of a PAA course.

(Neufeld, 2006)

Themes Related to Research Question Number Three

Research question number three stated “To what extent did the Practical and Applied Arts subjects influence students’ future career choices?” The themes that emerged from this research question included: exposure and experience, hands-on learning approach, and builds confidence.

Exposure and Experience

The PAA courses provide exposure to a different learning style (one which incorporates theory with practical applications) and possible career options. The ability to experience these varied career options was viewed as necessary for all students, at the high school level. The exposure to PAA courses may help students experience what some of the different careers involve, that are available to them after high school graduation, and this would be supported by Lynch (2000) and Lewis (1998). Exposure to a wide range of these PAA courses assists students in finding their strengths and weaknesses.

The PAA courses provide exposure to a different learning style and possible career options.

(Neufeld, 2006)

Hands-On Learning Approach

The hands-on learning approach of PAA courses appeals to many students. Similar to the finding of Upitis (2001), survey

respondents and the interpretation panel believed the ability to have education with a hands-on component was desirable for students. Neufeld (2006) revealed that this approach is not restricted to slower learners or students that “struggled” in high school.

Builds Confidence

It was believed that if a student did not experience success in regular courses but did excel in areas which had a practical component he/she may experience an increase in confidence. This increased confidence in a school subject area may lead to further education in that area and motivation to work harder in other areas; this was also the finding of Hardy (2000).

It was believed that if a student did not experience success in regular courses but did excel in areas which had a practical component he/she may experience an increase in confidence.

(Neufeld, 2006)

General Themes

The general themes that emerged from Neufeld (2006) included: Why wouldn't you take PAA courses?, PAA courses can..., PAA courses are..., Life long learning, Literacy for life, and Issues related to PAA courses.

Why Wouldn't You Take PAA Courses?

The research indicated there were societal and parental pressures for students to attend university. Survey respondents and panel participants believed that high school is geared towards students continuing their education at a university level. This was described by an interpretation panel member as being the case where the push was to go to university and that was not where his/her area of interest was. There was also a comment that there is too much emphasis on math and the science courses.

...there were societal and parental pressures for students to attend university.

(Neufeld, 2006)

The PAA courses are often viewed as “blue collar work”. It was viewed that society does not value this type of education or work. As a result, students are not encouraged to take these courses.

PAA Courses Can...

The PAA courses were found not only to give students exposure to varied careers but also to provide options. These experiences may lead to possible future employment. This opportunity to experience different types of jobs was viewed as valuable. It was believed that if students were not exposed to these learning opportunities through the PAA courses they may not experience these areas later in life.

The PAA courses may be used in the form of a hobby or as something to fall back on later in life. This is something the literature did not discuss but was discussed by the panel as a benefit of the PAA courses. It was believed that if students are exposed to areas of PAA at a young age it may be easier to attract them to the areas. Respondents believed the PAA courses influence future career decisions and have helped some students stay in school.

PAA courses may be used in the form of a hobby or as something to fall back on later in life.

(Neufeld, 2006)

PAA Courses Are...

The PAA were viewed by survey respondents and interpretation panel participants to be: more exciting than regular subjects; interesting; fun; practical; captivating students' attention; confidence building; absolutely necessary; hands-on; an alternative to compulsory subjects; relevant to real life; providing a practical approach to education; suitable for males and females; generating more effort and a desire to learn; providing experience and exposure; practical applications of other courses; and, an alternate form of learning for students who do not excel in the regular classroom setting. These views were also evident in the literature search.

The PAA were described as a starting point for future learning.

(Neufeld, 2006)

Life Long Learning

The PAA were described as a starting point for future learning. They were viewed as providing practical life skills for a

whole life. The knowledge learned can be applied to other areas (education, leisure, and career oriented). The PAA courses were described as increasing experience and reinforcing knowledge.

The knowledge learned [in PAA] can be applied to other areas.

(Neufeld, 2006)

Literacy for Life

The PAA were found to involve various forms of communication. Survey respondents, supported by the interpretation panel participants, believed that literacy goes beyond reading and writing. The interpretation panel found that technological literacy played a role in the PAA courses. The PAA courses enable students to learn something else easier. Students in PAA courses may be influenced to read more since they enjoy or are interested in the area. Survey respondents and interpretation panel participants believed the PAA courses may serve to keep students in school, if this is the case then students will also be learning in their other courses.

Students in PAA courses may be influenced to read more since they enjoy or are interested in the area.

(Neufeld, 2006)

Issues Related to PAA Courses

There are several issues related directly or indirectly to the PAA courses. The interpretation panel identified the inability to hire employees with trade experience. The fact that there are few journey persons indicates that there is a need for skilled trades persons.

Many survey respondents and members of the interpretation panel believed that all students should complete some form of PAA education or at least be exposed to PAA education (Neufeld, 2006).

...all students should complete some form of PAA education or at least be exposed to PAA education.

(Neufeld, 2006)

The interpretation panel believed the knowledge learned in PAA courses is not valued by society. This was also the belief of Lewis (1993), who believed “the practical arts have languished because as a class they do not conform to the traditional view of what constitutes valid knowledge” (p. 175).

The belief was that failure for PAA courses to be awarded greater merit is attributed to the lack of research, and acknowledgment of PAA as valuable learning (Neufeld, 2006).

Detailed information about the process and results of this study may be found in Neufeld (2006).

PART II: THE LITERATURE RELATED TO PRACTICAL AND APPLIED ARTS

There is not a great deal of current information published about the Practical and Applied Arts (Lewis, 1999a; Reed, 2002). Since Practical and Applied Arts is more of a Canadian term several other terms that were either related to, or a former reference of PAA were included in the literature search. They included: Industrial Arts, Technical Education, Technology Education, Vocational Education, Comprehensive High Schools, and (Technological) Literacy.

There is not a great deal of current information published about the Practical and Applied Arts.

(Lewis, 1999a; Reed, 2002)

History of Practical and Applied Arts in Canada

Formal vocational education in Canada dates back to the late 1700s. In Saskatchewan, vocational or technical education dates back to 1884, when Father Lebreton established an industrial school for Indians, near Qu'Appelle (Young & Machinski, 1972). In 1905 Saskatchewan became a province, and then assumed the responsibility for its own vocational training programs.

The terms vocational education and technical education have been used interchangeably for the past 50 years. Vocational education was described as specific preparation for employment. Technical education was described as similar to vocational education with more emphasis on theoretical content (Young, 1992).

Historically, various Acts have been passed throughout the years to address issues related to technical and vocational education (Young & Machinsky, 1972-1973).

After the Second World War, two forms of technical and vocational facilities emerged in Saskatchewan, composite and comprehensive high schools. The composite high schools were

developed prior to the comprehensive high schools (Saskatchewan Education, 1987).

Saskatchewan Education (1987) stated:

The concept of the composite high school was based upon the belief that it is the democratic right of students to have equal opportunity while in school for preparation for life beyond school, whether it be for entering the professions, the home, the farm, the business, or skilled trades. (p. 27)

A composite high school was not considered a vocational school. The composite education offered a well-balanced academic and technical program. Composite high schools were viewed as “able to lay broad, solid foundations in the various technical fields, making the transition from school to work place more positive and easier” (Saskatchewan Education, 1987, p. 27). Composite high schools were no different in kind from any other high school; they had their logistical issues, since not all high schools were composite.

The *Technical Vocational Training Assistance Act* (1960) brought resurgence to vocational education and began the development of comprehensive high schools (Saskatchewan Education, 1987).

The comprehensive high schools were designed to offer a wide variety of courses, to meet the needs and interest of all students. “It was the responsibility of these schools to provide a common core for all students and, as well, provide a wide range of electives that would ensure the optimum development of every high school student” (Saskatchewan Education, 1987, p. 28). In Saskatchewan there are currently 16 comprehensive high schools.

The history of Practical and Applied Arts in Saskatchewan evolved in 1987; the Department of Education, Advanced Education and Manpower, and Saskatchewan Library were

...it is the democratic right of students to have equal opportunity while in school for preparation for life beyond school...

(Saskatchewan Education, 1987)

The comprehensive high schools were designed to offer a wide variety of courses, to meet the needs and interest of all students.

(Saskatchewan Education, 1987)

assumed under the Department of Education, that is now Saskatchewan Learning (Young, 1992).

Lyons et al. (1991) explored the roots of Canadian prejudice against vocational education. They stated:

Canadians have historically considered vocational education to be preparation for second-class citizenship. Until recently, we did not treat domestic programs for training highly skilled workers as vital to the nation's interest. Whereas European countries had programs to prepare craftspeople for skilled trades, Canada relied on immigration to fill these jobs. (p. 137)

Canadians have historically considered vocational education to be preparation for second-class citizenship.

Lyons et al. (1991) argued that Canada needs to encourage students to see “vocational education as challenging and worthwhile” (p. 149). If we can achieve this, then we are making a positive step towards the future. “There is today more need than ever for timely information, co-ordination, and co-operation among government, industry, and labour to create and to modify a unitary industrial development strategy” (p. 146).

(Lyons et al., 1991)

From this historical view, it would seem the governments (Federal and Provincial) fund vocational education only in times of shortfalls of skilled trades' workers. Further, the Practical and Applied Arts are seen as job preparation courses, without value beyond preparation for work.

Need for Tertiary Education Including Practical and Applied Arts

Castellano, Stringfield, and Stone (2003) discovered “that failure to get at least a high school diploma creates increasingly high hurdles for young people seeking economic sufficiency in adulthood” (p. 4). They believed “school and district personnel are forced to make major programmatic decisions in the absence of replicating studies or, often, any process or outcome studies to inform their thinking” (p. 232).

...failure to get at least a high school diploma creates increasingly high hurdles for young people seeking economic sufficiency in adulthood.

(Castellano, Stringfield, and Stone, 2003)

Koontz (2000) described:

Advances in technology and growing international economic competition have greatly increased the nationwide demand for highly skilled workers. The growing gap between the skills of the American workforce and the technical requirements of today's jobs have re-emphasized the need to transform America's educational system to provide the solid academic and technical skills required by the jobs of today and tomorrow...The fact is, careers requiring technical skills comprise the largest percentage of available employment in our economy. These careers offer high pay and will make up 65 percent of available jobs as of this year, according to the Bureau of Labor skills...Other national statistics show that only 20-25 percent of high school graduates complete a four-year degree, which parallels the 20 percent required by professional labor. Yet by some estimates we spend about 75 percent of our combined local, state, and federal public education resources on this minority of students. (p. 1-2)

The fact is, careers requiring technical skills comprise the largest percentage of available employment in our economy.

(Koontz, 2000)

Since this is the case we must do what we can to improve the image of the PAA.

Koontz (2000) stated "the image of a precision machinist to a mother is not one she typically wants her son or daughter involved with. In addition, school counselors tell our youth to avoid manufacturing as a career" (p. 3). In order to avoid this negative bias "we must change the way we market this subject area as well as the content of the curriculum, so that we may meet current needs of entry level skill sets" (p. 3).

...the image of a precision machinist to a mother is not one she typically wants her son or daughter involved with.

(Koontz, 2000)

Mupinga and Livesay (2004) stated "in an era when the highest paying and most readily available jobs seem to be in the technical and medical arenas, it may not be worth initially pursuing a four-year degree when a one or two-year program will do" (p. 1). We want our population to be educated, however, "unless a student is preparing for a career as a lawyer or physician, which absolutely require advanced degrees, it is foolish for students and parents not to seriously research vocational-technical options" (p. 3). Unger (1992) agreed and made four points: There are greater costs

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(Mupinga and Livesay, 2004)

incurred with a university education versus a skilled trade; there is societal need for the trades; there are many areas of employment where the skills are learned on the job; education is important, however, a person should not attend post-secondary education simply because of the expectations of others.

Statistically, Unger (1992) found that 50% of students at four-year colleges and universities in the United States quit without ever graduating, which he attributed partially to social pressures to attend institutions they had no interest in. In Canada, Trinity Western University calculated an attrition rate of approximately 30% among first-year students. Research at Trent University indicated “40 percent of the students who enroll at a university will complete their degree there. Some drop out, others transfer to another school, some finish their degree at a later date” (Matusky, 2001, p. 20). Given the various enrolment, transfer, and dropout patterns of students it is difficult to establish precise university participation rates. However, “The 2002-03 university participation rates among 18- to 21-year-olds in Saskatchewan was 20.5%, and the corresponding Canadian rate was 19.7%” (Canada Millennium Scholarship Foundation, 2006, ¶ 34).

Lewis (1993) described how the practical arts have struggled to be recognized as valid knowledge and find a place in the curriculum. He stated “the practical arts have languished because as a class they do not conform to the traditional view of what constitutes valid knowledge” (p. 175).

The common theme is that the Practical and Applied Arts are undervalued by society, and by schools. Yet, there is also a feeling that we are not reaching our potential in our high school curriculum. We need to develop a curriculum that is relevant to our student body, such that students have a sense of gratification in their studies, and then they may prosper in their quest for

...the practical arts have languished because as a class they do not conform to the traditional view of what constitutes valid knowledge.

(Lewis, 1993)

We need to develop a curriculum that is relevant to our student body...

knowledge. The PAA offers this because the hands-on component of these areas make it useful and challenging to students and thus it is a tool to promote such areas as, literacy, numeracy, and cognition. Unfortunately, as Lewis (1993) points out:

In the secondary schools, the liberal curriculum has become an efficient, convenient way to sort children for their roles in society. Those who apparently cannot cope with this curriculum – who cannot pass the attendant examinations – have the practical arts school subjects as their alternative. (p. 197)

In the secondary schools, the liberal curriculum has become an efficient, convenient way to sort children for their roles in society.

(Lewis, 1993)

Reasons for Practical and Applied Arts at High School

The reasons for students taking PAA courses seem to fall into three categories: for utilitarian purposes; the concept of keeping students in school; and, problem solving, cognition, critical and creative thinking, and enjoyment. The fact is both boys and girls do well in PAA courses.

Lyons et al. (1991) discovered vocational education has been perceived as “preparation for second-class citizenship” (p. 137) despite the need for skilled trade workers. Lewis (1995) noted that the knowledge learned in technical education tends not to be considered knowledge and it is difficult to convince the public that the underlying value of technical education is academic. It has also been indicated that students attending technical/trade programs will, in less time and at less cost to them, be more likely to find employment than university grads (Mupinga & Livesay, 2004; Unger, 1992).

... students attending technical/trade programs will, in less time and at less cost to them, be more likely to find employment than university grad.

(Mupinga & Livesay, 2004;
Unger, 1992)

Hardy (2000) evaluated the experiences of vocational education and training students in their last year of high school. He discovered the confidence of students, acquired through learning in PAA courses, stimulated many to pursue further education and training in PAA related areas. Analysis of the research showed students’ work experiences were similar to their classroom experiences “this demonstrates that their transition to the labor

... the confidence of students, acquired through learning in PAA courses, stimulated many to pursue further education and training in PAA related areas.

(Hardy, 2000)

market is really begun during the course of their studies, and continues within the workforce” (p. 17).

The need for PAA courses has been established. There is demand for jobs requiring skills, which may suggest more emphasis on PAA courses. In order to achieve this we would have to get rid of the societal view associated with many of the PAA courses and related employment. Not all students require a university degree, because we will always have demand for a large percentage of jobs that do not require a university degree. There are social pressures for students to go to university; however, students should not go to university just because other people want them to.

Gray (2004) believed there are many stereotypes about Career and Technical Education (CTE) commenting “at the local level most high school principals readily admit that, without Career and Technical Education, their schools would have little to offer many students” (p. 2). The view is that CTE only prepares students how to get a job, it is designed for only male students, minorities, slower learners, and those destined for ‘dead-end jobs’. However, CTE is not designed for just potential drop outs and slow learners, but rather for some, “the lack of an alternative to strict academics is one reason why most dropouts choose to leave school in the first place” (p. 7).

Gagel (2002) described Technology as commonly associated with tools, and literacy with reading and writing. He suggested “technology should be cast in a more universal, literacy-oriented setting, Technological literacy” (p. 4). Although people view the technologies as an area that requires little literacy, technology actually enhances and promotes literacy, indicating that more research is required before technological literacy can be measured accurately.

... without Career and Technical Education, their schools would have little to offer many students.

(Gray, 2004)

... the lack of an alternative to strict academics is one reason why most dropouts choose to leave school in the first place.

(Gray, 2004)

According to Hill and Smith (1998), it is difficult to motivate students in many subject areas. “However, in the project-based classes, students demonstrated high levels of involvement and activity with their work” (p. 8). They found that students rarely ever skipped the class.

Yamazaki and Savage (2004) discovered “The impact of discoveries, inventions, and creative developments in science, mathematics, and technology is apparent in practically all spheres of life, but these fundamental fields of human inquiry and action often play an ambiguous role in education” (p. 1).

Upitis (2001) discovered that students enjoyed project-based units and had a “sense of pride” from creating with their hands.

Despite the inferior status of PAA, the PAA courses provide thinking (problem solving), hands-on opportunities and enjoyment (Upitis, 2001; Gagel, 2002; Hill & Smith, 1998; Castellano et al., 2003).

Most of the research in PAA argues for its purpose of filling society’s need and preparing students for the world of work. However, research investigating student involvement in PAA indicates the courses: are challenging and enjoyable; promote broad literacy; keep students in school, who might otherwise drop out. Given the limited research in PAA there is a need to establish the true educational potential of the PAA courses.

The State of Practical and Applied Arts in Saskatchewan

In 1987, the *Report of the Technical-Vocational Education/Comprehensive High Schools Review Committee* developed by a collection of people from government, post secondary education, School Trustees Associations, and the Saskatchewan Teachers’ Federation, developed a list of some thirty two recommendations for secondary schools in

The impact of discoveries, inventions, and creative developments in science, mathematics, and technology is apparent in practically all spheres of life, but these fundamental fields of human inquiry and action often play an ambiguous role in education.

(Yamazaki & Savage, 2004)

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(Upitis, 2001; Gagel, 2002; Hill & Smith, 1998; Castellano et al., 2003)

Saskatchewan. Some of the recommendations have been carried out and some continue to be worked on.

The quantity or extent to which any or all of the PAA areas are offered is dependent on the school, population, geographic location, access to finances, and the availability of qualified instructors. At the secondary level pure courses and survey courses are available from grades nine through twelve. Pure courses consist of modules taught in one subject area. Survey courses comprise a minimum of three areas in PAA. In Saskatchewan a student is required to have completed 150 hours in PAA by completion of grade nine (Saskatchewan Learning, 2003). At the grade 10, 11, and 12 level the PAA courses may be taken as electives.

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The Future of Practical and Applied Arts

The histories of PAA (Young, 1992) indicate PAA courses are promoted only when skilled trades persons are needed. Yet, we know many students enjoy PAA. They develop practical and cognitive skills through their PAA courses. Would students drop out of school if PAA courses were not available? Perhaps PAA should be promoted not just in times of shortage of skilled trades workers (such as now) but always, because the courses influence student enjoyment, thinking, and broad based literacy.

... PAA courses are promoted only when skilled trades persons are needed.

(Young, 1992)

The literature suggests that societal perceptions of PAA interfere with the offering of PAA courses (Lewis, 1999a, 1999b, 1998, 1995, 1993; Koontz, 2000). We must change social attitudes towards PAA because it is an area of education that benefits many students. Petrina (2000) believed that “without shop work, critical practices in the schools smack of a cultural elitism” (p. 200).

...without shop work, critical practices in the schools smack of a cultural elitism...

(Petrina, 2000)

Hansen and Reynolds (2004) found that university faculty perceived “In 20 years, the K-12 ITE [Industrial Technology Education] curriculum will reflect society: understanding alternative energy and advanced technologies; becoming aware of

In 20 years, the K-12 ITE curriculum will reflect society.

(Hanson & Reynolds, 2004)

technological implications; and the corporate sector's need for problem solving, planning, and spreadsheet skills will be needed both in society and in the classroom" (p. 8). As well, educators would continue to attract students to these areas and the term "industrial" would be removed from these programs.

In a report on the vocational/technical course taking, in the public high school education of the United States, Levesque (2003a) found that, in 1998, 96.5 percent of graduates had taken at least some credits in vocational/technical education. Levesque (2003b) discovered disadvantaged students were more likely to participate in vocational/technical education courses. In Saskatchewan, high school students typically spend "almost 20 percent of their course time on practical and applied arts" (Saskatchewan Learning, 2004, p. 68).

Throughout the history of education there have been new approaches to the PAA courses. However, each of these approaches has encountered implementation difficulties. Petrina and Dalley (2003) looked at the politics of curriculum reform in British Columbia. Technology education initially came into existence as Manual Training in the early 1900s. In 1925, the name was updated to Industrial Arts . In the 1970s the name was changed to Industrial Education. In the 1980s the name was changed to Technology Education. In 1987, as a status issue, Technology Education, Physical Education, Business Education, and Home Economics were grouped into the Practical Arts. The change was supposed to represent a shift from industrial production to technological problem solving, and provide for a literacy that equally served academic preparation, citizenship, leisure, and work. However, two thirds of the teachers rejected the change. The result was really only a name change because the teachers kept on teaching the same Industrial Education courses.

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(Saskatchewan Learning,
2004)

So, there really was no reform at all. Although their study was based in BC it describes the politics of curriculum reform everywhere.

In a study on technology education in New Zealand, Jones and Moreland (2002) found that students need to develop an understanding of the principles underlying technological development. They also noted that it was important for students to have an understanding of a range of technologies and be able to relate to the way they operate and function. Jones & Moreland stated:

For a new curriculum to be introduced and be sustainable a strong emphasis needs to be placed on a coherent and long-term research and development program that is then able to inform classroom practice. Curriculum implementation requires informed teachers who are able to develop sustainable programs in order to enhance student learning in technology. (2002, p. 4)

Volk (1996) attempted to clarify arguments for and against industrial arts. Although there was a transformation from the name “industrial arts” to “technology education” there was confusion in the eye of the public as to the meaning of the term “technology education”. Sanders (2001), found that far too often people associate technology with computers. Although computers are a form of technology they are not the basis of technology education.

Lewis (1998) argued for consideration of vocational education as general education where “all students would have equal chances of engaging in a breadth of studies supportive of wide-ranging vocational insight” (p. 283). His view was that all students should be exposed to vocational education, regardless of color or class.

Lewis stated:

So long as the tight connection between curriculum, race, ethnicity, class, and opportunity remains, vocational

Curriculum implementation requires informed teachers who are able to develop sustainable programs in order to enhance student learning in technology.

(Jones & Moreland, 2002)

... far too often people associate technology with computers.

(Sanders, 2001)

... all students would have equal chances of engaging in a breadth of studies supportive of wide-ranging vocational insight.

(Lewis, 1998)

education will continue to be tied to blue-collar work only, and schools will go on pretending that what they purvey in the academic curriculum is somehow transcendent, even though much of it is the knowledge that employers crave. (p. 305)

Attempts have been made to expand PAA beyond job skills to support literacy and problem solving. However, as with all curricular revisions there is resistance to change. Much resistance comes from society's beliefs about the value of PAA.

The Need for More Research

After examining research on technology education Lewis (1999a) argued that more research was needed and it must take place in the classroom. He believed "research is an important way in which the field of technology education can become further established" (p. 1). He discovered "topic areas that had received little attention included problem solving, cognition, instructional methods and strategies, and technological literacy" (p. 1). Lewis believed there is a lack of study in the area of PAA because "little is known about the pragmatics of the curriculum change process. What the change from industrial arts to technology education entails in actual schools or school districts has been studied very little" (p. 8).

Bordt, de Broucker, Read, Harris, and Zhang (2001) found that the federal government has made a commitment to increase funding into research and development in an attempt to make Canada one of the top five countries in research and development by 2010. Further, they found:

The Survey of Innovation, Advanced Technologies and Practices in the Construction and Related Industries shows a shortage of skilled workers to be the most prominent obstacle to using new and better building products, building systems and construction equipment. The shortages identified were most likely in the skilled trades. (Bordt et al., 2001, p. 8)

...all students should be exposed to it [vocational education], regardless of color or class.

(Lewis, 1998)

...topic areas that had received little attention included problem solving, cognition, instructional methods and strategies, and technological literacy.

(Lewis, 1999a)

... a shortage of skilled workers to be the most prominent obstacle...

(Bordt et al., 2001)

However, would the promotion of education in Practical and Applied Arts courses lead to increased numbers of students choosing careers in skilled trades?

The research suggests that further research may discover that the PAA courses in fact provide: problem solving, cognition, opportunities for engaging, and technological literacy to all students.

... further research may discover that the PAA courses in fact provide: problem solving, cognition, opportunities for engaging, and technological literacy to all students

PART III: RECOMMENDATIONS AND CONCLUDING REMARKS

Part III provides recommendations for future research, and concludes this report.

Recommendations for Boards of Education

The results of this research have led to numerous recommendations. The recommendations are as follows:

1. There is need for follow up research to establish the influence of courses offered to students in our educational system while the students are taking these courses.
2. Research should be conducted to compare the outcome of student education and employment from both comprehensive and non-comprehensive high schools.
3. Saskatchewan Learning should make provisions to survey all graduates to determine what happens to them (career and educationally) after high school.
4. Research should explore the negative view towards “blue collar” work to see what improvements could be made to validate Practical and Applied Arts courses as valid knowledge.
5. Boards of Education need to evaluate existing curricular programming to see how they can incorporate the Practical and Applied Arts courses into the daily education of our students.
6. Boards of Education need to allocate additional funds and personnel to the implementation of PAA programming.

Concluding Remarks

The PAA courses were found to cater to a wide range of academic achievement and not just to “slow learners” or “at-risk” students, as some may think.

High school Practical and Applied Arts courses have influenced students’ life long learning by providing exposure to different forms of learning. The Practical and Applied Arts courses provide hands-on experiences involving problem-solving, literacy, numeracy, and cognition which can only promote students’ literacy for life. There is a need for more research into the Practical and Applied Arts to demonstrate the benefits from this area of instruction.

The Neufeld (2006) study showed valuable information relevant to the role of the PAA courses. The difference in use of PAA based on school climate varied from course to course, however, observation of all PAA courses found only small variations between the two schools. There was evidence that survey respondents selected different courses based on gender. The profile of students who have taken Practical and Applied Arts courses in the comprehensive high schools were described as having overall high grade averages, which was contrary to the view of society. Respondents not using the knowledge learned in the PAA courses still saw their value and often used those skills later in life.

The PAA courses served as a stepping-stone to both post-secondary education and employment. The Practical and Applied Arts subjects provided exposure and experience to various career related courses. The hands-on learning approach incorporates theory with a practical component. The nature of the PAA courses is such that they provide life long learning skills. The exposure to these courses attributes to the literacy of the student.

The PAA courses were found to cater to a wide range of academic achievement and not just to “slow learners” or “at-risk” students, as some may think.

(Neufeld, 2006)

The nature of the PAA courses is such that they provide life long learning skills.

The literature told us that the Practical and Applied Arts courses have historically been funded based on industrial crises. The cyclical effect of supplying skilled trades workers in times of need may be reduced by a change in the societal image of the trades. Many students who have graduated who go on to university have often done so because of societal and parental pressures, instead of personal interest.

In the future there will still be issues related to PAA courses. The current issue is that the PAA courses have not been valued by society when there is such a shortage of skilled trades workers in our country. Although the PAA courses are not designed to create trades people, they do provide exposure and experience to some of the trade related areas.

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