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The learning preferences and tendencies of technological education teachers

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Abstract
Technological education teacher candidates are the focus of attention in this study. Teacher education research (Zeichner and Gore, 1990) suggests that most general studies teachers adopt some variation of a transmission model of teaching. Many potential technology teachers, by comparison, bring a different framework and set of premises to teaching. They have a perspective on learning that is practical rather than academic. Background experiences in an apprenticeship, in a cooperative education programme, or in a business and industry environment often nourish a learning ethic that is quite a contrast to the predominant one found in schools. The result, for these teacher candidates, is that preparing for and practising in the profession are perplexing to them. The fundamental premises about learning which drive curriculum policy and implementation in schools are examined in light of this finding.

What the case studies reveal is that those values and beliefs which differentiate academic versus practical learning tendencies among technology teachers are discernible but repressed. The case studies help the reader understand the dynamics of two distinct viewpoints, and their impact on teacher socialization. In a teacher development and curriculum change context teacher learning preferences and tendencies are particularly important. To what extent do these preferences and tendencies determine teacher effectiveness? How do the classroom and workshop experiences of technology teacher differ from those which characterize teachers in general studies subjects such as mathematics, social studies, or English?

The methodology associated with assessing and documenting the lived experience of these teachers is ‘life histories’ and ‘narrative inquiry’. The paper and/or poster session will feature a problem statement, research methodology, vignettes written by technology teacher candidates, an analysis of the vignettes, and a section on ‘the implications for practice/study in teacher education’.

Keywords: technological education, teacher socialisation, experiential learning

Years later when I began to work as a machinist apprentice I came to rediscover my true nature of learning. I was able to excel as a machinist, in all areas including math and programming skills which many of my colleagues found difficult. I believe this was because a machinist uses many senses in order to be successful. This is a job that requires a hands-on learner, one who learns through the interaction of the senses. The tactile, aural, visual, and emotional stimuli which one receives generates a sense of pride and accomplishment in a job well done. This is truly my learning style and the skills and knowledge that I have acquired and will continue to build upon will be retained by me for longer than anything that I have long ago temporarily learned and forgotten in the discursive world of schools. Truly this is the best learning environment for me. Technology Teacher Candidate - Fulkerson, F., UWO, 2000

This excerpt from the journal exercise of a thirty-year-old technology teacher candidate at the University of Western Ontario reveals a problem in our schools and in the way we prepare teachers for their chosen profession. Among many contradictions associated with the pedagogy we perpetuate as teachers and
teacher educators, one is particularly invisible. It is that we ask our young to defer their natural tendency for learning in favour of an artificial one. This paper and the example documentations from technology teacher candidates make the contradiction more 'explicit' or visible.

Teacher education socialization research (Zeichner, and Gore, 1990) suggests that most general studies teachers adopt some variation of a transmission model of teaching. Such teachers believe, partly as a result of their training and partly out of conditioning from their own schooling, that learning in schools is about 'knowing' rather than 'experiencing'. They perpetuate a system of teaching into which they were successfully indoctrinated when they were students in high school.

Many technology teachers, by comparison, bring a different framework and set of premises to teaching. They have a perspective on learning that is 'practical' rather than 'academic'. Background experiences in an apprenticeship, in a cooperative education programme, or in a business and industry environment often nourish a learning ethic that is quite a contrast to the predominant one found in schools.

In a teacher development and curriculum policy/change context teacher learning preferences and tendencies are particularly important to understand. The lives of technology teachers and the relation of their experiences as teachers to the culture of the secondary school unveils a problem identified by Layton (1993:15). “No subject challenges the historic role of schools as institutions which decontextualize knowledge quite so strongly as does technology”. The aim here is to clarify the difference between an 'theoretic' versus 'practical' orientation to learning, and to explore how a practical or experiential framework for learning contributes to the well being of our young and an understanding of 'how people learn'. It is thought that teacher candidates who have either been socialized into a business and industrial culture or who have a tendency for learning through practical means learn through a 'sense of physical location'. The case vignettes which follow offer evidence of this tendency as well as the need for change in school curriculum theory and practice. That need involves a fresh look at the assumptions we, as school based educators, adopt when we teach in school environments.

Research Methodology
Case study research aims to create insight and understanding rather than generalization. It gathers evidence from individual 'cases' in the form of personal testimony (in this instance from teacher candidates). The methodology associated with assessing and documenting the lived experience of these teachers is 'life histories' (Jones, 1986) and 'narrative inquiry' (Connelly, and Clandinin, 1990). Information is collected in the form of journals, observations, and a life-story interviews. Each source of evidence corroborates or refutes the other two. This three-part evidence collecting process is known as triangulation. If the three sources of information support one another, the evidence is thought to be credible. The researcher in such cases maintains a role that probes the recollections and perceptions of the person (technology teacher) involved in the research. The purity of such accounts can range from strictly autobiographical to what Connelly and Clandinin (1990:12) call 'collaborative stories'. “And our own story telling, the stories of our participants merged with our own to create new stories, ones that we have labelled 'collaborative stories'."

The following vignettes are from a journal exercise that was required of the technology class at the University of Western Ontario, Faculty of Education. In concert with the analysis undertaken by the author they constitute the 'case study'. The study represents an effort to more fully understand what it is about technology teachers and teaching that is central to their development over the early years of their career.

Fred
The most important insight which I learned about myself as a learner [in school] was that it did not matter to me what other people thought about my potential, I knew it was unlimited.
Unfortunately I also came to oppose authority constantly. Many years passed before I began to respect people in authority. I was not aware of it at the time, but I demonstrated my true nature of learning, and emphasized in myself a return to the initial method of learning that all of us employ. I reconstructed my experiential learning tendencies. Unfortunately, the experience was not a good or constructive one and I became someone who would not trust or respect teachers until they could prove themselves to be a person who treated all others with respect and trust. Still to this day if anyone suggests that I am not capable of a task I catch myself working hard to prove them wrong. In some ways this is good, but I have to pay close attention to my actions so as not to overreact.

From my perspective at the time (and I strongly believe this today) it became apparent to me that the most effective learning environment is one where the educator is able to set aside personal prejudice and focus on the needs of each individual. By doing so you can more effectively provide the area of individual attention that each student requires. This applies to all aspects of any work environment in which I have been employed. I certainly did not fully understand my learning tendencies then, but I am beginning to now. I am, by nature, a hands-on experiential learner and my schooling did not allow me to develop my learning style to any significant level from which my full potential could be realized. During my time in school my parents and teachers all emphasized how important it was to learn and do well in school. I did try to adapt my learning tendencies to suit their perceived views on how to study and learn, but I was only able to achieve limited success through these methods.

I now have the patience to follow through with the ‘needed’, not just the ‘wanted’. Immediate gratification is the catch phrase for it these days, and it is a popular notion too. Everyone wants it now!

Was work just a means to an end back then, or was there more? I do not think I would call work ‘noble’ if it were just a way to buy another car (something I was doing frequently at the time). So if there was more, why was it there, where did it come from? The answer lies in school.

What these vignettes reveal is that the values and beliefs which differentiate ‘academic studies’ from ‘practical learning’ are discernible, but repressed. They [the individual journal excerpts] help the reader understand the dynamics of two distinct learning cultures, and their impact on teacher socialization.

Fred, for example, is particularly strong and articulate in expressing his less than stellar experience as a learner in schools. He had a number of demeaning experiences which to this day remain vivid in his memory. Many, in fact, get through it unscathed. In hindsight, many appreciate the discipline style to what my parents and teachers thought it should be, and I did achieve limited success.
that school life imparts. On the other hand, some who think they are better off for schooling experiences may not have confronted their feelings fully or thought through what really happened. Sociologists are often quite blunt about the latent dysfunctions of the school. Bowles and Gintis (1976) argue, for example, that schools don't reduce or remove class inequities, they perpetuate them. At the individual student level British sociologist Basil Bernstein (1970) argues that learning in schools serves middle class children (with strong linguistic orientations) well and deprives working class children (with strong non-discursive tendencies). He states: “Thus the working class child may be placed at a considerable disadvantage in relation to the total culture of the school. It is not made for him [sic]: He [sic] may not answer to it.” (p 346). This point is further reinforced by the writings of Margaret Donaldson (1987:78): “The better you are at tackling problems without having to be sustained by human sense the more likely you are to succeed in our educational system, the more you will be approved of and loaded with prizes.”

In Mark's case a wisdom is evident. His ability to reflect and to weave the two periods (then and now) into his writing, and his reverence for work (rather than school), is particularly interesting. This thirty-five year old man could tackle the problems without having to be sustained by human sense the more likely you are to succeed in our educational system, the more you will be approved of and loaded with prizes.

Implications

What makes the study of technology teachers with outside-of-school experience and their reverence for experiential learning pertinent/interesting is the timing - a period in which schools as institutions find themselves re-considering the relevance of a continuously abstracted academic curriculum for all students.

The classic model of transmission teaching has been under scrutiny for some time, as has the classic school subject mix deemed to be important by school leaders. The technology curriculum, meanwhile, is undergoing a massive overhaul. Technical specializations have been integrated into broad based fields of technology; eg, manufacturing, transportation, design, communications. The teachers from these quite different curriculum worlds enjoy a range of status levels, satisfaction variables, and career advancement opportunities. Technology teachers of the past are often stigmatized for their practical
expertise and culture, although those characteristics are now gaining a modest respectability and prominence.

The implications that come from the recognition that a non-discursive curriculum may be at least as important as a discursive one, are equally interesting in a curriculum policy/theory context. The fundamental premises about learning which drive curriculum policy and implementation in schools are not often discussed in the conventional educational sciences literature. Theories about learning, however, abound. One safe observation about the body of research on learning is that it is 'undistinguished’. After forty years of research and hypotheses, there is no consensus on, or definitive understanding of, ‘how people learn’. What does exist is a growing and interesting body of evidence which suggests that ‘experiential learning theory’ may be an element in teaching methods courses that is worth exploring. Recent literature (Kessels, and Korthagen, 1996; Layton, 1993), points to a renaissance of sorts in the way educators think about how students become engaged in learning and how schools systems interpret reality through the curriculum. Meaningful and authentic learning, in this view, is thought to be based in experience, the same experience that technology teachers have long cherished as valuable and necessary to learning in the many diverse fields of specialization which make up the world of technology, and technological education.

Recent research (Harre and Gillett, 1994), suggests that real learning requires a sense of physical location to contextualize, precipitate, and reinforce it. Harre and Gillett argue that such learning takes place when individuals are stimulated by a broader combination of senses than sight and sound. They argue that learning of a non-discursive nature, i.e., learning through a sense of physical location, stimulates a sense of self, a precursor to real learning. Such a position challenges the fundamental assumption which drives school learning. That assumption is that knowledge can be acquired independent of practical action.

References