Art. # 953, 8 pages, http://www.sajournalofeducation.co.za

Between college and work in the Further Education and Training College sector

James Garraway
Cape Peninsula University of Technology, South Africa
garrawayj@cput.ac.za
Joseph Bronkhorst
Cape Peninsula University of Technology and Department of Basic Education, South Africa
Sharman Wickham
Cape Peninsula University of Technology, South Africa

Students studying Civil Engineering (CE) at the Further Education and Training (FET) colleges spend periods of time in the classroom and workshop as well as in the workplace during experiential learning. The overall purpose of education and training in the college sector is generally understood as preparing students for employability, and difficulties in colleges performing this role are well known. In this article, these difficulties are examined in a novel way. The everyday perspectives of lecturers and supervisors about student learning in their college programmes and their work experience are translated into more theoretical language, using activity theory. A theoretical argument is made, which suggests that different sites of learning create different purposes, and that these different purposes derive from a distinction between knowledge and practice, which in turn has historical roots. The study concludes by suggesting that a new, common object of integrating theory and practice at all the sites would better link the college and workplace education and training systems, and tentatively suggests how this new object could be put into practice.

Key words: activity theory; civil engineering; further education and training; theory and practice

Introduction

This article investigates the relationship between learning and doing at college and in work practicums in the FET sector in South Africa. The purpose of the colleges, as outlined by the Republic of South Africa (1998) is to train students for the workplace in order to meet economic imperatives, while acknowledging that students will not be able to operate autonomously on qualifying. The particular focus of this article is the relationship between knowledge and practice, within the field of CE artisan training. This focus is examined through translating the perceptions and experiences of lecturers and supervisors in the classroom, workshops and work practicums, into more abstract theoretical language drawn from activity theory. The purpose of the article is then to analyse the knowledge/practice relationship theoretically, and to tentatively suggest how the issue may be approached from an activity perspective.

Hull, Forrester, Brown, Jobe and McCullen (2000), argue that the role of vocational education in the 21st Century is clearly not fulfilled by simply providing job training, as has been assumed in the past (i.e. simply skills around the workings of a particular machine or procedure), but should now attempt the integration of knowledge and practice between the college and the workplace. However, various authors researching within the vocational sector – both locally and internationally – have argued persuasively that knowledge taught in general subjects is not easily or simply transformed into the specific and contextualised nature of particular work practices and problems (for example, Allais, 2006; Gamble, 2003, 2009; Wheelahan, 2008; Young, 2006). These authors focus attention on different forms of knowledge while the activity-based research reported here aims to emphasize the different systems at college and at work, and how they may be better coordinated.

While acknowledging that there are different programmes offered at the colleges, we are not comparing the programmes, but rather trying to make a point about tensions involved in the intersection of knowledge and practice. The focus of the research is therefore on two models for vocational education offered by the colleges, apprenticeships and the National Certificate Vocational (NCV) programme, as both are characterised by periods spent in class, in the workshop, the yard and under supervision in the workplace.

Apprenticeship is a NQF level 4 qualification. Apprentices are sent by their employer to an FET college for one trimester, and then return to supervised work practice. During their time at the college, they are taught various knowledge components of their respective trade. Apprentices also acquire essential skills required for practice in the workshop.

The NCV programme is offered at NQF levels 2, 3 and 4. It gives Grade 9 learners a vocational alternative to an academic Grade 10–12 by offering industry-focused training. The NCV qualification has much less workplace-based training time allocated to it than does the National Education Policy (NATED) artisan route, and also has significantly less exposure to the workplace. FET colleges have faced legislative difficulties in placing NCV students into the workplace, as they are not employees of particular companies, nor are they covered under the Occupational Injuries and Diseases Act. The main aim of the NCV programme has been to ensure that FET colleges meet the growing need for vocational and technical training in the country.

Artisan training, via the above programmes, has gone through a period of relative neglect, but is being revived, with growing support from employers in both the private and public sectors, including state-owned

enterprises. The National Artisan Moderating Body (NAMB) has been established to monitor the quality of artisan training and testing, so as to assure the quality of trade tests and the trade testing system, and to make recommendations to the Quality Council for Trades and Occupations (QCTO) on the certification of artisans.

In the classroom, CE students learn about, for example, construction drawings, various descriptions of and specifications for making concrete columns. There are also descriptions of the types of instructions, principles and steps for constructing the columns. The traditional subjects within the CE course have various elements of mathematics and physical science. For example, some of the elements, such as strength of materials, stress and strain from physics, and areas and volumes from mathematics, are used to determine the strength of the volume of a concrete slab, which is constructed in the workplace.

The CE curriculum is compiled in such a manner that students learn practical activities in the workshop and college yard, for example the construction of a concrete column. The tools that the students work with are physical, such as the operation of machinery and equipment. Simulated activities are used most of the time, and small models are constructed, which later are destroyed to make space for other models.

In the workplace, students are under supervision from skilled practitioners at a real CE site. This constitutes a form of 'experiential learning', as students are actively engaging in practices which may have real consequences (Stevens & Richards, 1992), rather than doing simulations. In terms of learning, the workplace supervisor should assume the responsibility of the college lecturers. Therefore, the workplace supervisor ought to become responsible for integrating knowledge from the classroom and the practical from the workshop/yard with what is occurring in practice on site. The primary task of the lecturer, who does play a small role in workplace training, is to visit the workplace and assess whether the student is competent in carrying out various practical tasks.

Data for this article was gathered in the period 2007-2009, as part of the Doctor of Education (D.Ed) studies of one of the authors (Bronkhorst, 2014), which was finally submitted in 2013. While acknowledging that there have been changes and proposals since this initial research commenced, the authors believe that the methodological approach to examining vocational education, and some of the insights flowing from this, to still be of value to researchers, and possibly policy implementation today.

Since this data was collected, there have been roundtable discussions involving Government, Sector Education and Training Authorities (SETAS), unions and Non-Governmental Organisations (NGOs), aimed at improving FET college provision (Report of the Further Education and Training Steering Committee, 2010). Issues highlighted included the education/training divide, and the difficulties students experienced in moving between these institutions, as well as the need for greater responsiveness to industry and the allowance of flexibility in curriculum design from the colleges. These issues were again picked up in the White Paper for Post-School Education and Training (Department Higher Education and Training (DHET), Republic of South Africa, 2013). The policy devoted a chapter to the problems experienced by FET colleges, for example the technical expertise of teaching staff, poor management and resources, and adequate student support. Of particular interest was a focus on promoting partnerships with employers, possibly with the help of SETAS, so that students could gain valuable work experience. Furthermore, it was suggested that those more directly involved with workplaces play a larger role in the design of the vocational curriculum, and that this could be enabled through the South African Institute for Vocational & Continuing Education & Training (SAIVCET). This body consisting of stakeholders from work, university, NGOs and the university would help support curriculum responsiveness and staff development.

Theoretical Framework of Activity Theory

Activity theory uses the concept of activity systems (such as a workplace or a school) consisting of interacting social and material elements, in order to both describe and understand the dynamics of complex social systems (Engeström, 1987; Nardi, 1996). It accounts for the environment where the activity is taking place, the history or background of the person or the subject, their culture, the role of the artefact, motivations and the complexities of real life activity.

Activity theory analysis is always underpinned by certain principles. Firstly, when people engage with others or things, their actions are always mediated by artefacts such as language, culture or a material object. Secondly, all human activity is purposeful towards some sort of objective. Thirdly, there are always contradictions that arise out of activity, and fourthly, such contradictions often have historical roots (Engeström, 2001).

Activity theory is used in this analysis firstly, because it provides a powerful and clarifying tool for understanding what is actually happening within a system (Nardi, 1996), such as the college and workplace. Secondly, activity theory has recently been used to extensively examine transitions from school to work, and the differences and difficulties that emerge during these transitions (Konkola, Tuomi-Gröhn, Lambert & Ludvigsend,

2007; Le Maistre & Paré, 2004; Tuomi-Grohn, Engeström & Young, 2003).

The interacting elements, which make up the system, are variously described as subject, object, mediating artefacts, division of labour, community, and rules. Figure 1 shows the various elements of an activity system and their connecting relations according to Engeström (1987). A brief description of the elements is now given.

Engeström (1987) proposed there to be inter-relationships between the elements of the activity triangle through processes of mediation. For example, the relationship between the subject and the community is mediated by the rules shaping the community and the object is mediated by the division of labour among members of the community.

Activity systems (ASs) have a *subject(s),* an individual or group from whose perspective the AS is made known to the researcher, for example how things are typically done, and by whom, within a particular system under analysis.

The concept of an *object* is difficult to pin down in activity theory research. On the one hand it can be seen as the purpose or driving force of the activity, and on the other hand, as a moving target or developmental object; these are not, however, distinct definitions. As Engeström (1987:79) points out, the object can provide direction, as well as be partially "shaped" by the mediating effects of the elements of the system as the subject works on or towards it.

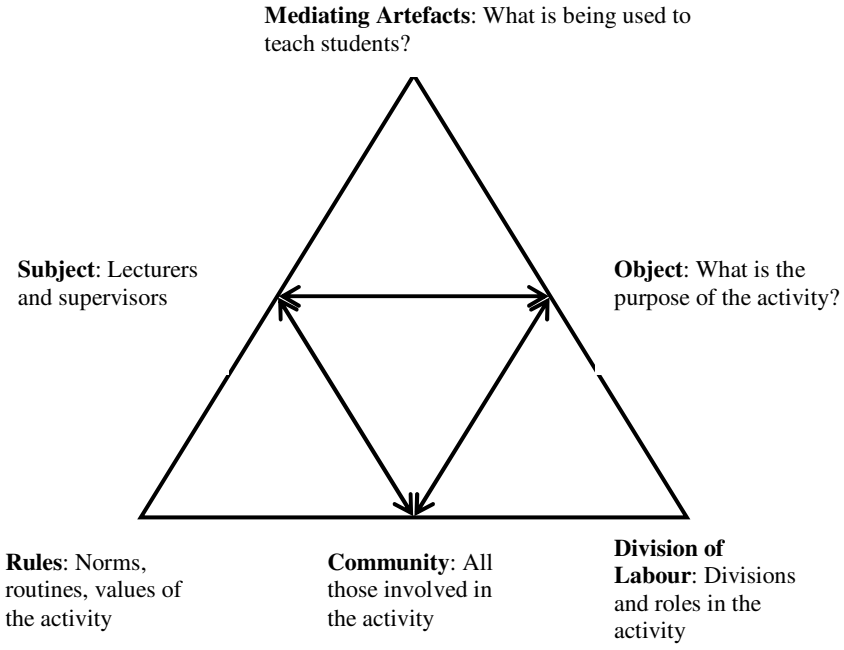

Figure 1 The various elements of an activity system (adapted from Engeström, 1987:78)

Mediating artefacts are understood as anything that mediates the subjects' actions upon objects. For example, in the CE classroom miniature tools may be used to mediate learning about real tools.

The subject is part of a larger *community*, which conditions all the other elements of the system. The student, lecturer and workplace supervisor are engaged in an activity of learning, and they act together on an object with a common motive for students to qualify as CE artisans. In this activity, the community constitutes the students, lecturers and workplace supervisors, all of whom have a part to play in executing the activity.

Moreover, activity systems, according to Engeström (1999) also have a *division of labour* that shapes the way the subject(s) acts on the object (and potentially on all the other elements of the system). Division of labour in Engeström's (1999) model primarily refers to organisational divisions, for example, between bosses and workers, or between workers with different roles. Daniels (2001) has extended this original idea of divisions to include divisions between different types of knowing in the curriculum, for example between knowledge/theory and practice.

Activity systems also have *rules*, broadly understood not only as formal, explicit rules, but also as unwritten or tacit rules that are often called norms, routines, habits and values. The rules may shape how the subject is able, through mediating artefacts, to work on the object.

One of the principles of activity theory is that there are always historically accumulated tensions within activity systems. These tensions can be explored and expanded upon in order to lead to a new purpose or object of the system as a whole, which is more advanced than the old object, and can lead to the system as a whole being more effective. The same argument can be applied across activity systems, for example, between systems in the classroom and at work.

Methodology

The focus of the research was a comparison of learning in the different systems of the classroom, the yard/workshop and the supervised workplace, as is typically found in apprenticeship and other similar FET programmes. The aim was to locate significant differences or 'contradictions' across the systems that may lead to a lack of articulation between the college and the workplace. Furthermore, the nature of such differences could then be described theoretically through the lens of activity theory.

This project involved a comparative study that was conducted at four FET college sites in the Western Cape in the classroom, workshop/college yard and CE workplace. Data was collected from 16 CE lecturers and seven workplace supervisors. Lecturers and supervisors were thus the informants or, in activity terms, the 'subjects' in the research. The sites were chosen for ease of access, as one of the researchers was employed as the Head at one of the colleges. The data was then collated and compared with the intention of understanding relationships between the different activity systems of the classroom, yard and workplace.

A mixed-method approach using surveys and interviews was applied. Gay and Airasian (2003) refer to this type of research as QUAN-QUAL, or as involving integrating simultaneous qualitative and quantitative methods. The advantages of using a mixed-method study, according to Frechtling and Sharp (1997), are that combining the two approaches sharpens our understanding of the research findings.

Interviews were conducted after the completion of the surveys to provide further clarification and explanation. The interviews were used to obtain multiple responses to set questions and also allowed for more detailed responses than those in the survey. The duration of the interviews varied from place to place, depending on factors such as time, work commitments and working conditions. They were conducted over a period of three weeks.

The basic questions asked of lecturers and supervisors in the surveys and interviews concerned what students were doing in the learning sites and what mediating artefacts they were using for what purpose, as well as who was involved at the different sites. Data gathered could then be coded according to the different elements of the activity system (Engeström, 1987), as discussed in the framework section, which were:

- the object which focuses on the learning that is taking place in each AS;
- the mediating artefacts which are the tools and equipment for learning;
- the division of labour which refers to the division of tasks and roles of members;
- the community, which refers to all participants, involved in the study;
- the rules which are the norms that regulate the actions of the student.

Thus, for example, using this system of coding, survey data revealed that very little industry engagement happened in the classroom (e.g. industry visits, guest lecturers), though in interviews, staff acknowledged that this could be very useful in giving students a better picture of industry. Here we could code the classroom community as having little involvement with work practitioners, and the division of labour as being marked by a relative exclusion of work practice. Derived from this type of coding, significant trends could then be highlighted by the researchers.

During the research, confidentiality of respondents was rigorously observed, and no respondent was in any way prejudiced. The research on which this article is based was granted ethical approval by the Faculty of Education Research Committee at the Cape Peninsula University of Technology.

Results and Discussion in the Various Elements according to the Activity Theory Model

Rules

Rules at the college are mostly assessment rules determined by the DHET. Lecturers reported that students needed to be competent in knowledge of content and procedures when they were being assessed, and needed to pass tests with a minimum of 40 percent. For the practical assessment in the workshop, students must be found competent before they are allowed to proceed to the next practical task. If they are found 'not yet competent', they must re-do the task until they master it. It is thus possible to suggest that the overall norms of the college environment are similar to those of a regular school, in the sense that they are focused on teaching and learning within the curriculum. Many of the 'rules' regarding knowledge appear in policy documents, and thus serve as regulations.

Rules at the workplace, on the other hand, according to supervisors, are mostly linked to production, and are determined by the workplace. With production, the focus is on timelines and project completion. In other words, the culture of the workplace is determined by getting a job done, rather than by a focus on student learning or the curriculum. Workplace supervisors typically des-

cribe the rules as below, without much reference to curriculum and assessment: *"my responsibility is to make sure that the project is completed on time and with a high quality of workmanship…we are often pushed by senior managers to complete the projects, so I see this as one of my 'big' roles."*

Apart from the culture of production, the more overt rules involve the requirement that students follow instructions exactly as given by the workplace supervisors. However, instructions, according to supervisors, are more often than not incorrectly followed: *"students very seldom adhere to instructions. I have asked them to set up three metre profiles to build a corner of a building but they only build a one metre profile."*

What seems to emerge from an analysis of the different rules in the classroom and workplace is a different focus on knowledge and assessment at the college, and, at work, on practice or completing the task.

Division of Labour

According to lecturers, the responsibility of the students is to learn in the classroom and try to understand the knowledge first, so that the knowledge can be linked to the practical in the workshop/college yard. Lecturers asserted that the students' role in the classroom is to gain knowledge and learn from the lecturers, complete assignments and write all the tests. In the workshop, they needed to engage in practical activities, such as the 'building of various items such as staircases, columns and setting out various projects'. The lecturers teach the CE content in the classroom, trying to ensure that there is a link between the knowledge and practice, and prepare the students for the final examination. In the workshop/college yard, lecturers identified their responsibilities as ensuring that they rectify practical skills problems students encounter in this environment.

The workplace supervisors reported that their focus is on doing the job at the workplace and therefore, most of them put it that 'they build dams, bridges and roads'. These activities occasionally bring the knowledge component into practical training. They indicated that their responsibilities are to expose the students to real work projects and ensure that the students complete these. The real work projects they refer to are smaller tasks, such as constructing concrete columns or hanging doors. These smaller tasks form part of the completion of larger, final projects.

Lecturers do play a monitoring role in the workplace but their impact on practice is minimal, as lecturers indicate: *"there is some involvement from lecturers in assessing students' and recording the assessment in their logbooks* [of tasks performed] *but this is limited in scope."*

Students perform different functions at work and in the classroom that may lead to a division between knowledge and practice. The structure of the workplace and classroom is such that this divide is accentuated, as the classroom is mostly about teaching the knowledge of the curriculum while work is about doing/practice.

Mediating Artefacts

Mediating artefacts include what students use to get the job done at both the college and at work. Two main mediating artefacts that emerged from the classroom data were models/diagrams of real tools and descriptions of CE processes. In their classrooms, students are exposed to smaller models of tools (for example, dumpy levels) or to pictures of these tools and their functions, and the structure and function of these tools is described. They also learn procedures such as formwork for concrete columns in the classroom.

In the yard/workshop, students are exposed to real tools, and have an opportunity to use their learnt procedures and knowledge of tools in practice. However, lecturers suggest that more modern, efficient tools are used at work as compared to those demonstrated to students. One example given is that of older, diesel-powered compactors used in the college as compared to pneumatic compactors used at work.

In the workplace the expectation is that students would be able 'to do the jobs given' based on what they have learnt at the college. However, approximately half of the workplace supervisors' responses indicated that the procedural instructional methods used by the college are out of date, as supervisors pointed out: *"the curriculum that I was taught a few years ago is still being used in the college without any adjustments"* and *"I would love to see the curriculum get a total overhaul but whoever sets the curriculum must involve industry for the latest techniques and methods used."*

At the time of writing, an example of curriculum out-datedness can be described with reference to formwork. The current formwork for erecting concrete columns onsite comprises steel structures, but at the colleges, the timber method of constructing formwork was still being taught, and students were thus learning woodwork skills such as joinery: *"back then, mostly timber formwork was used as the boxing method, but if you look at the way concrete columns are being constructed today, steel formwork is mostly used."*

Part of the problem arises from the prescribed curriculum, and the external examination related to this, which is designed nationally. Staff suggested that in some cases, the curriculum designers had lost touch with what was actually happening at work, leading to a CE curriculum that does not fulfil the needs of industry. As one staff member explained, *"students should be taught the knowledge and skills that are on par with the latest*

developments in industry". This can be described as a contradiction between knowledge/procedures taught and actual practices at work.

Community

The college community is comprised of students and lecturers, and sometimes parents of students. There is very little interaction with workplaces in the form of work visits, guest lecturers from industry or even projects where students experience work-like conditions. As one work supervisor suggested: *"students need more exposure to site conditions as most of them do not know what is expected of them* […] *partnerships must be set up with industry so that students can familiarise themselves with proper procedures happening on site."*

Included in the community would also be the curriculum designers from the Department of Education, who have already been described by lecturers as operating at some distance from actual work practices. The work community, on the other hand, is dominated by supervisors, other work colleagues and sometimes even clients. Though lecturing staff are to a small extent involved here, they have little say in what actually happens at work.

The community composition in the college of students, lecturers and parents devoid of workplace people may further lead to a focus on knowledge and teaching in the college classroom – hence a disjuncture –and again, a possible contradiction between knowledge and practice. This apparent contradiction may be further heightened by the limited engagement of college lecturers in workplace practices.

Object

There is an expectation that the object (which in this research is similar to the purpose or what drives the activity system) of the activity systems at the college and workplace would be the same, to prepare students as CE artisans.

Lecturers constantly grapple with the question of the purpose of teaching the students in class; is it to prepare them for the final examination, or is it to prepare the students for the workplace? Interviews with lecturers were quite telling in that lecturers are clearly under pressure to focus on students learning the curriculum: *"teaching the students for the final examinations is priority for me. If I don't do this they will not pass the examinations then I will have to 'please explain'* [sic]*."*

There is an expectation that the workshop/yard would serve as some form of bridge between the college and the workplace. Its purpose would then be to integrate knowledge and practice. But because what is happening in the yard is based on what is taught in the curriculum, this is not necessarily the case, as one lecturer explains: *"the training provider (college) and industry do not offer the same knowledge and practice and therefore they are not at the same level and use different methods of explaining Civil Engineering concepts."*

As supervisors expect students to be ready to work, their role is not one of necessarily teaching students. Thus, the workplace supervisors identify the object of the work experience as making sure that students understand instructions in order that the job is done properly. For example, students will be given a task to perform according to specifications and then the workplace supervisor will determine whether the object has been reached or not. The focus of the workplace supervisors is ensuring that students understand the implications of not heeding instructions. From the perspective of the supervisors, as noted previously under the section describing rules, the overall purpose of students' being at work, is to get the job done: *"one of my main tasks is making sure that the project is completed on time* […] *and that the company's money is not wasted* […] *and this is my responsibility (to see that the job is done) with a high quality of workmanship."*

Conclusion

The research findings, interpreted through an activity theory lens, point to serious disjunctures between the sites of learning, in terms of rules, divisions of labour, mediating artefacts and community. These disjunctures in turn point to a gap between the FET college system and the CE industry. This issue of disjunctures or gaps has already been pointed out in policy and steps have been suggested to close these gaps (DHET, Republic of South Africa, 2013).

However, what this research puts forward is that disjunctures may in part originate from the 'object' or *purpose* of the activity. The reason for focusing on the 'object' is because in activity theory the elements of the activity system may act on the object and thus may serve to change or reshape it from its original purpose (Blackler, 1995). This is likely to occur where the rules, divisions of labour, mediating artefacts and community are different in the different activity systems of the classroom, yard and work practice. Thus, although there may be a general view among staff that there is common object of 'learning to become CE artisans' in all three activity systems, the findings suggest something different. The predominant purpose of each of the three activity systems is different, namely: knowledge about curriculum content and procedures for the final exam in the classroom; practising these (sometimes outdated or incorrect) procedures in the yard; and actually working towards a product in the workplace.

One of the aims of activity theory analysis is to suggest improvements in activity systems so that overall, work, learning and even productivity may

be enhanced, with Blackler (1995) referring to this type of improvement as the development of a more advanced object (Blackler, 1995). In the light of the data gathered, it could be suggested that the further education colleges and CE workplaces should work collaboratively to produce a more advanced and improved object for the currently poorly articulating systems. The more advanced object, which would both focus the work of the college more on current practice and the workplace practicum more on knowledge and learning, it is suggested, could be 'integrating theory and practice'.

There are no easy ways to translate this theoretical object into improved practices in the college sector, but one tentative suggestion might be to follow the example of advisory committees in universities of technology, which have a similar role to the proposed SAIVCET in the White Paper for Post-School Education and Training (DHET, Republic of South Africa, 2013). Such committees are comprised of representatives from work and university lecturers, and meet four to five times a year. Their main purpose is to facilitate curriculum responsiveness from the university side, but they also involve developing capacity in industry for improved workplace learning so that it is better aligned to supporting curricular knowledge. The success of such committees in working on integrating theory and practice is somewhat uneven and often difficult to achieve. There has not been much research on the functioning of these committees. Garraway (2009), however, reports that successful interaction frequently involves, firstly, an acknowledgement of differences between the activity systems of work and university such that each other's practices and needs can be highlighted (in activity terms these are 'contradictions'). Secondly, what is then needed is the exploration of these differences through the actions of individuals who occupy in-between positions (for example engineers who are also part-time lecturers). Their actions are then potentially productive, in terms of integrating theory and practice, when they can elicit support from colleagues in initiating the development of a changed or new curriculum section that is supported by both academics and work representatives. A further and related systematic approach to integrating theory and practice, again drawing from activity theory, could be that of boundary crossing laboratories (Engeström, 2001). Here, rather than once-off meetings, representatives from different activity systems engage in recursive cycles of raising of difficulties, reflection and the production of new ways of doing and thinking. This sort of approach is currently being utilised in wetlands management in South Africa to better integrate environmental theory and the actual conservation practices on the ground (Lindley, 2014).

References

Allais S 2006. Problems with qualification reform in senior secondary education in South Africa. In M Young & J Gamble (eds). *Knowledge, curriculum and qualifications for South African further education.* Cape Town: Human Sciences Research Council (HSRC).

Blackler F 1995. Knowledge, knowledge work and organizations: An overview and interpretation. *Organization Studies,* 16(6):1021-1046. doi: 10.1177/017084069501600605

Bronkhorst J 2014.Work-integrated learning in the FET sector. D.Ed thesis. Cape Town: Cape Peninsula University of Technology.

Daniels H 2001. Activity theory and knowledge production: Twin challenges for the development of schooling for pupils who experience EBD. *Emotional and Behavioural Difficulties,* 6(2):113-124.

Department Higher Education and Training (DHET), Republic of South Africa 2013. *White Paper for Post-School Education and Training: Building an expanded, effective and integrated post-school system.* Pretoria: DHET. Available at http://www.dhet.gov.za/SiteAssets/Latest%20News/White%20paper%20for%20post-school%20education%20and%20training.pdf. Accessed 15 September 2014.

Engeström Y 1987. *Learning by expanding: An activity-theoretical approach to developmental research.* Helsinki: Orienta-Konsultit Oy.

Engeström Y 1999. Activity theory and individual and social transformation. In Y Engeström, R Miettinen & RL Punamäki (eds). *Perspectives on activity theory.* Cambridge: Cambridge University Press.

Engeström Y 2001. Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work,* 14(1):133-156.

Frechtling J & Sharp L (eds.) 1997. *User-Friendly Handbook for Mixed Method Evaluations.* Arlington, VA: Division of Research, Evaluation, and Communication, Directorate for Education and Human Resources, National Science Foundation.

Gamble J 2003. *Curriculum responsiveness in FET colleges.* Cape Town: HSRC Press.

Gamble J 2009. *Concept paper: The relation between knowledge and practice in curriculum and assessment.* Pretoria: Umalusi.

Garraway J 2009. Higher Education and the world of work. In E Bitzer (ed). *Higher Education in South Africa: A Scholarly Look Behind The Scenes.* Stellenbosch: SUN Media.

Gay LR & Airasian P 2003. *Educational research: Competencies for analysis and application* (7th ed). Upper Saddle River, NJ: Pearson Education.

Hull KA, Forrester S, Brown J, Jobe D & McCullen C 2000. Analysis of recidivism rates for participants of the academic/vocational/transition programs offered by the Virginia Department of Correctional Education. *Journal of Correctional Education,* 51(2):256-261.

Konkola R, Tuomi-Gröhn T, Lambert P & Ludvigsend S 2007. Promoting learning and transfer between school and workplace. *Journal of Education and*

Work, 20(3):211-228.

Le Maistre C & Paré A 2004. Learning in two communities: The challenge for universities and workplaces. *Journal of Workplace Learning,* 16(1/2):44-52.

Lindley DS 2014. Can expansive (social) learning processes strengthen organisational learning for improved wetland management in a plantation forestry company, and if so how? A case study of Mondi. PhD Thesis. Grahamstown: Rhodes University.

Nardi BA 1996. Activity Theory and Human-Computer Interaction. In BA Nardi (ed). *Context and consciousness: Activity Theory and Human-Computer Interaction.* Cambridge, MA: The MIT Press.

Report of the Further Education and Training Steering Committee 2010. *Recommendations to the Minister of Higher Education and Training.* Available at http://www.kwikwap.co.za/fetceo/docs/FET%20Summit%20Recommendations.pdf. Accessed 15 April 2014.

Republic of South Africa 1998. Further Education and Training Act No.98 of 1998. *Government Gazette,* 401(19421). Available at http://www.dhet.gov.za/Private%20FET%20Colleges/Further%20Education%20and%20Training%20Act%20No.98%20of%201998.pdf. Accessed 15 September 2014.

Stevens PW & Richards A 1992. *Changing schools through experiential education* (Report No. ED345929). Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools. Available at http://files.eric.ed.gov/fulltext/ED345929.pdf. Accessed 29 June 2007.

Tuomi-Gröhn T, Engeström Y & Young M 2003. From transfer to boundary-crossing between school and work as a tool for developing vocational education: an introduction. In T Tuomi-Gröhn & Y Engeström (eds). *Between school and work: New perspectives on transfer and boundary crossing.* UK: Emerald Group Publishing Limited.

Wheelahan L 2008. *Can learning outcomes be divorced from process of learning? Or, why training packages make very bad curriculum.* Paper presented at the 11th Conference of the Australian Vocational and Educational Research Association.

Young M 2006. Conceptualizing vocational knowledge: some theoretical considerations. In M Young & J Gamble (eds). *Knowledge, curriculum and qualifications for South African further education.* Cape Town: Human Sciences Research Council (HSRC).