Indicators of creativity in a technology class: a case study

S. Vandeleur
Roedean School, Johannesburg
P.J. Ankiewicz
Department of Curriculum Studies, Rand Afrikaans University, P. O. Box 524, Auckland Park, 2006 South Africa
pja@edcur.rau.ac.za
(To whom correspondence should be addressed)
A.E. de Swardt
Department of Curriculum Studies, Rand Afrikaans University, Johannesburg
E.J. Gross
Department of Curriculum Studies, Rand Afrikaans University, Johannesburg

Reproductive learning has answered the survival needs of the past and, although this kind of learning is still required, it is no longer sufficient in education. If one of the challenges of education is to prepare children for a fast-changing world, then teaching children to be creative becomes an imperative. Teachers seem to lack the skills and knowledge needed to recognise when creativity is taking place. In this study we investigated how learners demonstrate creativity whilst engaging in the technological process employing a qualitative research strategy, with observation and focus group interviews as the methods of data collection. From this data, indicators of creativity emerged. Schools must encourage learners to be creative and Technology Education provides an ideal opportunity.

Introduction

Recent technological change has both created and destroyed jobs, and changes in society are happening so rapidly that it is difficult to determine what knowledge will be needed for the future. In order to prepare for this future, children will need skills providing them with control over their lives and their learning, as learning will be a lifelong exercise (Fischer, 1990:vii). The majority of teachers in South Africa have been used to an education system that used rote learning, which encouraged conformity and memory retention. Reproductive learning, although still necessary, is no longer sufficient. If our learners are to cope with the rapid rate of change at an individual and social level, they will have to move away from memory, stored knowledge and passivity, to adaptability, originality and participation (Eggleston, 1992:5; Perkins, 1992:31-34).

Learners need to develop a critical and creative consciousness so that they can adapt and transform their world (Eggleston, 1992:5). Our educational system has taught us to look only for one correct answer. This approach can work in some situations, but it stops us looking for alternative answers that would solve problems in innovative ways. This emphasis on linear thinking has dominated our thinking, and learners have been taught to make uncritical use of formulae, rules and procedures. Learners have not been encouraged to use creativity in order to actively participate in their own learning (Ankiewicz, 1995: 252). We need to challenge and stimulate learners' abilities to address problems that are designed to elicit higher levels of thinking. Teachers of Technology Education need to focus on the type of teaching, learning or thinking required to achieve this aim.

Technology Education can contribute greatly to the enhancement of creativity. This is evident in the draft national framework for curriculum development (HEDCOM, 1996:3), which states: "In our changing world, where we must also compete as communities and as a nation to secure and sustain the viability of our economies, the critical skills of resourcefulness, problem-solving, the ability to learn both individually and in groups and the ability to conceptualise and design novel situations are at least as important as technical dexterity."

Within the new Curriculum 2005 framework, the specific outcomes for Technology Education indicate that learners should be able to identify and solve problems and make decisions using critical and creative thinking. In Technology Education creativity is central to developing the learner as an innovator capable of coping with a rapidly changing world. Creativity thus plays an important role in Technology Education, yet few of the publications on Technology Education indicate how teachers can recognise creativity when it occurs in the classroom. This research is therefore concerned with how creativity manifests itself in Technology Education. In order to do this it is necessary to define creativity and the technological process.

Creativity is difficult to define. It is not a single distinctive ability; it is rather a way of using one's abilities (Perkins, 1986:14). Creativity is intentional and is less concerned with the solution than with insights. Creativity is based on ordinary thought processes, but what differentiates it from other thought processes is its intentionality, according to Perkins, 1992 (as quoted by Brandt, 1986:14). Creative people call on their minds with different questions from the questions less creative people ask themselves. Creative thinking is therefore inherent in every individual, and teachers need to be aware of how to encourage and foster creativity in the classroom. It is through the educational process that most of us have been trained to be convergent thinkers, with early emphasis on only one correct answer, instead of being given examples that use divergent thinking leading to alternative solutions. Teachers thus frequently stifle the creativity in their learners (Couger, 1995:381; Zdenek, 1985:12).

The technological process encompasses several types of processes. Critical and creative thinking form the basis required for problem-solving and the design process. Critical and creative thinking and problem-solving are general processes. The design process, however, is subject specific to Technology Education.

Statement of the problem

Creativity plays a major role in the technological process. The relationship between the problem solving and technological processes, as well as between the design and technological processes has sufficiently been described in the literature. What remains to be explored is how teachers can recognize when creativity is manifested in their technology classrooms. This means that, during a technological activity, teachers should be able to identify indicators exhibited by learners that show that creativity is taking place.

Aim of the research

The main aim of this research project was to determine the indicators of creativity that occur during a particular technological activity.

Research design

Case study

Indicators of creativity were explored and described by means of a case study, following an inductive, qualitative approach (Strauss & Corbin, 1990:23). The data collection methods consisted of observation by means of videotape, as well as a focus group interview with participants. Data analysis was done according to the eight steps of Tesch (Creswell, 1994:163).

Population and sample

Convenience sampling was used to select three Grade 7 pupils from an independent girl's school who participated in this research project.

Convenience sampling was used because this particular Grade 7 class was the first group to start Technology Education at this school.

Trustworthiness

Although there is no single, coherent set of qualitative methods applicable in all analyses of texts, verbal communication and interaction, there are a number of different methods for ensuring trustworthiness. Trustworthiness involves efforts to ensure accuracy of data and truthfulness (Perakyla, 1997:201; Maxwell, 1996:80). The following strategies were implemented to ensure the 'truth value' of this study:

- **Data triangulation:** This was based on the two methods of data collection (observation and the focus group interview) and literature control (Berg, 1995:25; Kerlinger, 1986:479-481; Krefting, 1991:219; Cohen & Manion, 1994:233).
- **Member checking:** The three participants were provided with a verbatim transcript of the observation and the interview for verification (Krefting, 1991:219; Cohen & Manion, 1994:238).
- **Interview technique:** Reframing questions, repeating questions and expansion of questions enhanced credibility (Krefting, 1991: 220; Cresswell, 1994:159). For this purpose the interview was conducted by a competent, experienced researcher.
- **Comparison of sample to demographic data:** For every claim or interpretation at least two sources were provided to support the researchers' analysis and interpretation of the findings (Guba, 1981, in Krefting, 1991:221). This enhanced the confirmability of the research.

Findings

From the observation and the focus group interview, two general themes emerged: Direct indicators of creativity and indirect indicators of creativity.

Direct indicators

Direct indicators of creativity identified in this research were generating ideas, experimenting and persistence.

Generating ideas has ideational mobility, originality, critical thinking, enjoyment and regard for aesthetics as its subcategories; experimenting has risk-taking and cyclical procedure as its subcategories; and persistence has no subcategories.

Indirect indicators

Indirect indicators of creativity were influences, which consist of group interaction, pre-knowledge, cultural influences and values, motivation and self-esteem as sub-categories. These findings are represented in Figure 1. A discussion of the themes will follow.

Direct indicators of creativity

A direct indicator of creativity consists of observable behaviour that is a prerequisite for creativity to take place, whereas an indirect indicator of creativity enhances or aids creativity, but is not a requirement for creativity to take place. Group interaction, for example, can enhance ideational mobility, but group interaction can take place without creativity necessarily taking place.

The following direct indicators of creativity were identified in this study:

Direct indicator 1: Generating ideas

Subcategory 1: Ideational mobility

Ideational mobility is also known as 'ideational generation' (Petty, 1997:15), 'ideational fluency' (Perkins, 1984:18; Plucker & Renzuli, 1999:39) or simply 'ideation' (Plucker & Renzuli, 1999:39). Ideational mobility is more than producing a large number of appropriate and unusual ideas efficiently; it is being able to reformulate the problem, to create analogies, to make the problem more abstract or more specific (Perkins, 1984:19). Open-ended problems, where the learner is given freedom of choice in gathering information and the generation of ideas, provide greater opportunities for creativity (Wakefield, 1994:459).

The following remarks noted during the observation illustrate the learners' freedom of choice in generating ideas, as well as the flow of ideas from the participants. It was also evident that the participants searched for more than one idea.

Participant 2:	You say the snowman
Participant 1:	OK. Snowman
Participant 2:	Can do elf
Participant 3:	(...) Reindeer.
Participant 1:	And reindeer.
Participant 2:	Highly original.
Participant 1:	OK. What about Santa Claus? Christmas tree?
Participant 3:	With a (...) sticking up
Participant 1:	How about an angel? Flying wings? Snowflakes
Participant 2:	Snowflakes?
Participant 1:	Ja, like just a snowflake when it goes out Like a small, little sort of thing
Participant 3:	You could do like um Father Christmas's bag um (...)
Participant 1:	With presents popping with a little (...) popping out.
Participant 2:	So Christmas bag.
Participant 1:	A bag full of toys How about like a (...) so you know the legs can move
Participant 3:	Hmmmmmm.
Participant 2:	Chhis, it does, it does work, usually. That's what I thought. Um?
Participant 1:	Hey, what about like a um How about elves, an elf? With a little sort of (...) on its hat and it goes like that

The generation of ideas is an important aspect of creativity. According to Petty (1997:15) it takes a lot of bad ideas before a creative person comes up with a good one. Petty observes that "... creativity is like mining for diamonds, as most of what you dig up is thrown away, but that doesn't make the digging a waste of time". Learners need to pursue more than one idea; they need to go beyond the 'one correct answer' outlook.

Subcategory 2: Originality

Learners need to be encouraged to look for ideas outside the normal framework. Bailin (1987:24) states that creative thinking is precisely the type of thinking, which can transcend frameworks by breaking out of old frameworks.

The following observation excerpts show a purposeful search for originality:

Participant 1:	I think some of these ideas are boring like the snowman and the postman when they wave their arms. That's when they're boring

Participant 1:	Out of these we've got to decide what how how we do these. OK. With an angel what would it do? Its wings will fly. What else could it do?

The following excerpt from the interview with the teacher shows a purposeful attempt at originality:

The learners made a purposeful attempt to 'break out' of old frameworks. This purposeful 'breaking out' to make an idea original also made the idea the groups' own — it gave them a feeling of ownership. Being original played a large role in the learners' choice of ideas. Originality is therefore an indicator of creativity as it enables the learners to break out of old frameworks.

Originality is a central aspect of creativity. In a discussion on creative abilities Couger (1995:370) states that " the capacity to produce original ideas, solve problems in unusual ways, and use things and situations in an unusual manner" is important. It takes self-esteem to be confident enough to be original. Learners need to develop an

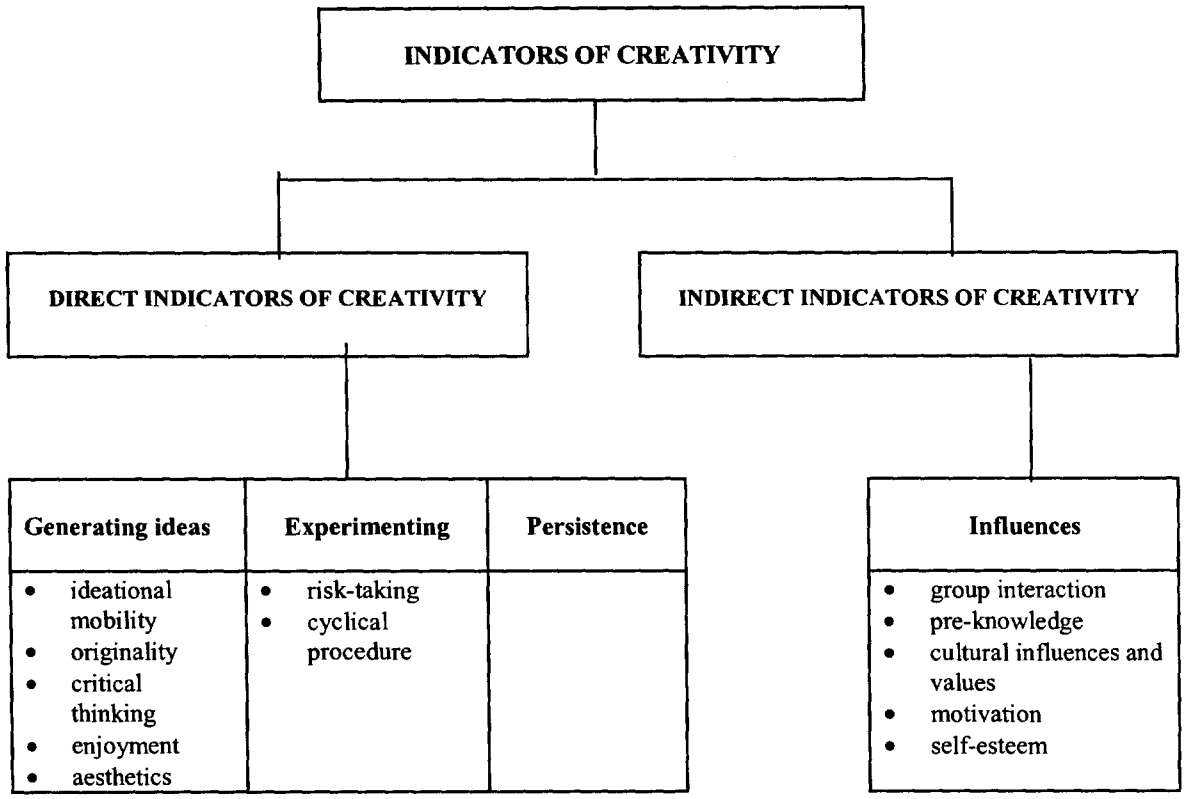

Figure 1 Indicators of creativity

individual sense of competence and to feel pride in their own thinking (Azuma, 1991:197; French & Rhoder, 1992:60). It is this 'individual sense' that gives an idea the stamp of ownership.

Subcategory 3: Critical thinking

Critical thinking plays a crucial role in the creative process (Nickerson, 1999:398). The initial recognition that there is a problem to be solved, determining of how to proceed, and the evaluation of the value of the created product all require critical judgement (Bailin, 1987:25).

Evaluation

Evaluation, a crucial aspect of the creative process, is concerned with gauging the potential strength or weakness of a creative idea (Petty, 1997:98). It is important that learners recognise which new idea is a good idea — they need to distinguish between good ideas and bad ideas (Sternberg & Lubart, 1995:4). Critical thinking is the ability "to separate the relevant from the irrelevant, to deduce reasonable conclusions, to evaluate the appropriateness of an idea, product or solution" (Couger, 1995:370).

Evaluation is central to the process of designing. The designer evaluates and re-evaluates the product as it is evolving. This requires an ongoing evaluation in which the learner uses a predetermined set of criteria and also evaluates his own way of working (Fritz, 1996: 186-187).

The following remarks reveal that evaluation took place after the participants had come up with ideas:

Participant 1:	Ok. Now that we have some ideas we've got to evaluate what we can't do OK. ... person (...) boring.

Participant 1:	Or still (...) we'll evaluate them a chimney, a fireplace

The following remarks show that practical implications influence whether the idea will work:

Participant 2:	Chimney.
Participant 3:	Turkey I think turkey is cute.
Participant 2:	So do I. And the champagne is clever as well. But but a bit difficult.

These remarks show how the learners went about evaluating their ideas:

Interviewer:	So who decided on .... Just tell me more on how you sorted out ... um ... who was what ideas was best and what would work?
Participant 2:	We would just like put it in columns and then ... we crossed out all the things that we didn't think would work.
Participant 1:	We had to evaluate our brainstorming. We had to get our own design.

The learners were involved in evaluation throughout the period of observation. They constantly judged their ideas: "That's so cute", "It's too difficult", "I think that's wrong", "A bit boring that". It was very much in evidence that they were able to tell the good ideas from the bad ones. Evaluation can therefore be used as an indicator of creativity, as it is required to judge ideas and to analyse problems.

Clarification

Like evaluation, clarification is an important part of the creative process. It is a type of critical thinking that involves a 'stepping back' from what you are doing in order to look at the work in progress in a logical way (Petty, 1997:117). It enables the learners to attach meaning to what they are doing and it gives their work a sense of focus.

The following excerpt from the interview illustrates that confusion can lead to clarification:

Participant 1:	Confusion is actually one of the best things because if someone said to you I'm confused then you say well let me explain it and you actually explain it to yourself as well as explaining it to her. For you see the mouth will open and then (...) Sometimes you will see that the idea actually wasn't so good because the mouth won't open that properly and it changes. So I think confusion's very good.

Clarification enables the learners to rework their ideas as well as making them look for alternative good ideas. Palmer (1996; as quoted in Lewis, Schaps & Watson, 1996:20) wrote: "A learning space needs to be hospitable not to make learning painless but to make the painful things possible things like exposing ignorance, testing tentative hypotheses, challenging false or partial information, and mutual criticism of thought". Whilst exploring ideas, learners will come across ambiguity and confusion, but this ensures that the activity is heading in the right direction and it helps one decide between alternative ideas (Petty, 1997:108; 118).

Subcategory 4: Enjoyment

If you enjoy what you are doing, then you are more likely to come up with more ideas and not be too judgmental about them.

The following remarks indicate that the learners had fun while engaged in the activity:

Participant 2:	So ... we've done the ...top ... Cute ...Haaa! This is quite good , hey!

Participant 1:	It was also just fun. It felt like ... well it's nice. I don't know why it's like (...) and goggles and saws and make holes and drill. It just feels nice. And to actually ... actually create something ... to create something and make it work it's like one of the best feelings

Enjoyment, fun and participation all have on effect on creativity, as enjoyment enhances intrinsic motivation, which in turn influences the perseverance of the learner (Perkins, 1992:45; Petty, 1997:176; De Swardt, 1998:38). Torrance (n.d., as quoted by Petty, 1997:174) suggests that if one enjoys what one does, then the other characteristics of the creative person come into being: "Since I reached the conclusion that the essence of the creative person is being in love with what one is doing, I have had a growing awareness that this characteristic makes possible all the other personality characteristics of the creative person: courage, independence of thought and judgement, honesty, perseverance, curiosity, willingness to take risks and the like."

Subcategory 5: Regard for aesthetics

The look and quality of the finished product were of concern to the learners. The following remark illustrates this:

Participant 1:	Well, as we said with the Red Bull we made it look really attractive and that just brought it to life.

De Bono (1984:19) observes, "Creative thinking involves aesthetics as much as practical standards". Pesut (1991:107) states that when an individual continually refines and/or shapes ideas, arguments or products based on his or her own perceptions of a desired outcome, then he or she is using self-regulated thinking. It is evident therefore that the attractiveness of a desired outcome is of particular importance to a creative individual.

Direct indicator 2: Experimenting

In Technology Education, learners are able to attempt designs where outcomes are not predictable; they are able to look for ideas outside the normal framework. This affords them the opportunity to play around with ideas. Couger (1995:368) states that one of several important conditions for creative thinking is a "... willingness to play around with ideas, to play with possibilities".

Subcategory 1: The willingness to take risks

Risk-taking is very closely linked to self-esteem and the ability to accept failure. It is self-belief that unlocks one's creativity and gives one the courage to take risks. Our present educational system focuses very much on vertical thinking, one correctness and doing things right the first time (Couger, 1995:381).

The following excerpt shows the learners' willingness to take risks:

Participant 2:	... and then I think that's wrong.
Participant 1:	(...) about how it works (...) You want to make the head move back.
Participant 3:	OK.
Participant 2:	But you see you need to push the head forward. So it can go ... so it can meet.
Participant 3:	Like that. Yes.
Participant 1:	I would.
Participant 2:	(...) depending on how we do that. We do that.
Participant 1:	Try that.
Participant 2:	See that moves very little but it moves forward.
Pariticipant 1:	Oh Jaaaa! (...)
	Let's put it over here and see what happens ... Go.

Risk-taking plays a large role in creativity. Halpern (1997:253) states: "The ability and willingness to take risks and to tolerate ambiguity is also needed for creative acts". Throughout the learners' schooling they are taught that mistakes are to be avoided at all costs. As a result they become afraid to err and to risk the kind of thinking that can lead to creativity (Wakefield, 1996:460; Sternberg, 1996:82). Learners and teachers need to become less averse to risk and to encourage sensible risk-taking in order to promote a thinking classroom (Couger, 1995:366; Sternberg, 1996:80; Antonietti, 1997:73).

Learning to accept failure is another important aspect of experimenting. "Creative people accept the higher risks of failure as part of the processes, and learn to view failure as normal, even interesting and challenging" (De Bono, 1984:19). Teachers need to encourage sensible risk-taking in their classrooms and they need to encourage their learners to see mistakes as a challenge.

Subcategory 2: Cyclical procedure of idea generation and experimentation

From the observation, it was evident that there was a cyclical procedure that the learners followed. They came up with an idea, developed the idea by looking at the strengths and weaknesses, and then reworked the idea.

The following remarks show the learners' willingness to rework their ideas:

Participant 2:	Wait ... must the face be facing that way? So ... he'll be drinking like that?
Participant 1:	That ... he's looking this way.
Participant 2:	Ah, with the bottle. Let me try that again.

It has been acknowledged by many researchers that creativity involves a repeated cycle of generation of ideas and experimentation (Petty, 1997:75; Finke, Ward & Smith, 1992; as quoted by Halpern, 1997:249; De Bono, 1984:19). This cyclical process and the fact that there is no singular path to a solution imply that the process is not algorithmic. Technological tasks are heuristic in nature (not algorithmic), and therefore involve higher order thinking (Amabile, 1983: 360). Johnsey (1995:214) states that the processes involved in

designing are reiterative, spiralling back on themselves, proceeding by incremental change and the occasional flashes of insight. In order to encourage heuristic thinking, teachers need to design tasks where outcomes are not predictable and enhance cyclical thinking.

Direct indicator 3: Persistence

Persistence is very closely linked with the cyclical procedure of idea generation and experimentation. Learners need to persist with their ideas in order to improve them.

The following excerpt shows the learners' view of persistence:

Interviewer:	OK. And how important is it to persist with an idea? Because you were saying that you were actually discarding some ideas. Once you had this idea you said it didn't work but you actually ... uh ... changed things?
Participant 1:	If you really wanted to do an idea and you see it doesn't work the first time you've got to see well how can I change this? How can I make it work. And in that way you're persisting at this thing. If you really want to make it work.
Participant 3:	Try and try again. You could get it right.
Interviewer:	And how important is that?
Participant 3:	It's very important.
Participant 2:	Very important.
Participant 3:	If ... it depends on you. If you really, really want to do this then ... then you're obviously prepared to ... do to do all the work. To see how it works and things.
Participant 1:	We weren't too persistent on the turkey that's why we didn't carry on. I think if we had been persistent we would have got it

Research (Policastro & Gardner, 1999:214) into the lives of creative individuals shows that highly creative individuals put enormous amounts of time and energy into their work. Policastro and Gardner (1999:214) state, "... creative talent entails a holistic involvement in a process that is highly complex, deeply meaningful to the person, usually prolonged, and demanding". Persistence requires hard work, a belief in what one is doing and an acceptance of failure as being part of the process. LeBoeuf (1990:18) writes, "Flashes of brilliance come to those who work for them".

Indirect indicators of creativity

Indirect indicators of creativity enhances or aids creativity but it is not necessary for creativity to take place e.g. group interaction can enhance ideational mobility, but group interaction can take place without creativity necessarily taking place.

Indirect indicator 1: Group interaction

Group work promotes critical thinking — looking for strengths and weaknesses of an idea in a group could trigger more ideas. Working together also aids persistence, idea generation, and clarification in the case of confusion.

Participant 2:	Well if you're by yourself you really get lonely and you don't know what to do if you're confused.

McCormick (1996:71-75) states that group work gives learners the opportunity to develop their conceptual knowledge as well as their procedural knowledge, and that making their thinking explicit will enhance problem-solving and design.

Indirect indicator 2: Pre-knowledge

Creativity requires more than ideas; it calls for knowledge, skills and experience. Creative people need to draw on existing knowledge in order to create something; one cannot create from a vacuum (Petty, 1997:108). One learner commented:

> "The guidelines helped. ... but in some ways you just ... you thought how levers worked".

Indirect indicator 3: Cultural influences and values

The following comments of a learner indicate that values influence creativity:

> "... the reason we used Red Bull was because we didn't want to sort of way ... it's beer. We didn't think it was a good idea. ... we were going to put it as a drunk person ...".

Feldman (1999:179) stated that social and cultural realities largely determine the possibility or lack of possibility for developing creativity in a given field.

Indirect indicator 4: Motivation

In order to increase intrinsic motivation, learners need to enjoy the work they are doing for its own sake. This research found that participants enjoyed the 'make' aspect of Technology Education. As one learner commented: "... and make it work it's like one of the best feelings".

Indirect indicator 5: Self-esteem

Self-esteem implies that one has an inner courage to carry through with an idea. Everyone needs self-esteem — one can't work without it (Petty, 1997:154). Self-esteem is evident in the following comments from participants:

> "... we wanted to make it look professional ... we also wanted to show that we knew what we were talking about ..."

There is an interconnectedness between the indicators for creativity. It is the interconnectedness that probably complicates the recognition of creativity.

Recommendations

Technology Education teachers need to be able to recognise creativity when it occurs, place by observing the direct and indirect indicators of creativity. In order to promote creativity teachers should:

- create a climate that fosters the generation of ideas and increases flexibility, fluency and originality of thought;
- set tasks that are enjoyable and poses a challenge;
- allow learners to take ownership of their work by being allowed to experiment;
- encourage learners to persist and to accept not getting things right the first time;
- build self-esteem by helping learners make their own decisions, reinforcing questioning behaviour, and allowing learners to experiment with their own ideas;
- create a culture that encourages sensible risk-taking, allows for mistakes and respects the contributions of the individual, as well as allowing learners to step into the unknown; and
- continually encourage creativity.

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Models for mergers in higher education

M.M. Botha
Faculty of Education, Vista University, Private Bag X613, Port Elizabeth, 6000 South Africa
botha-mm@pelican.vista.ac.za

References to possible combinations of higher education institutions in the CHE report on the size and shape of higher education (30 June 2000) have spawned a debate on the issue, as well as responses from and internal actions in higher education institutions, that range from aggressive through defensive to strongly resisting. As it is highly unlikely that no combinations whatsoever will be effected, it is valuable to investigate a combination/merger scenario. This article provides some basic information on various models for merging institutions/companies, that has been sourced from the literature regarding the private sector. The appropriateness of each model to the current higher education context must be extrapolated by reconfiguration of the information. A possible model for higher education mergers, based on such extrapolation, is presented against the background of the National Plan for Higher Education, released on 5 March 2001. One of the advantages of this exercise is to contribute to the demystifying of the concept of mergers, i.e. "exorcising the ghost".

Introduction

In January 2000 the Minister of Education tasked the Council on Higher Education (CHE) to investigate whether "our higher education system is indeed on the road to the 21st century", asking the CHE to provide him with "concrete proposals on the size and shape of the higher education system .... which serve as guidelines for restructuring", because without reaching "finality on institutional restructuring", it would not be possible to "ensure the long-term affordability and sustainability of the higher education system" (Council on Higher Education, 2000b:1-2). To comply with this brief from the Minister, the CHE established a Size and Shape Task Team. This Task Team released a discussion document in early April 2000 (Council on Higher Education, 2000a), engaging key constituencies (including the public) on the matter at hand. A final report (Council on Higher Education, 2000b), dated 30 June 2000, was handed to the Minister on 18 July 2000 (hereafter referred to as the Size and Shape or SS report).

The SS report concludes with a comprehensive list of recommendations to the Minister, inter alia the following on the **shape** of the higher education system:

4. The absolute number of institutions should be reduced through combination.
5. ....., the Minister should investigate the full range of possibilities for combinations.
8. ..... to consider the establishment of a single distance education institution ... (CHE, 2000b:44-45).

and on the **size** of the system:

5. There should be no closures of institutions. The absolute number of institutions should be reduced through combination (CHE, 2000b:45).

and on the **procedures and processes**:

- Consultations with stakeholders followed by
- an interactive process resulting in
- a national plan to be followed by
- the combining of institutions (CHE, 2000b:48).

The SS report was followed up by the National Plan for Higher Education (NPHE) (dated February 2001, released on 5 March 2001). The NPHE reiterated the above statements of the SS report, regarding **size** and **shape**, viz. the reduction of the absolute number of institutions and investigating the full range of possibilities for combinations (NPHE, 2001:section 6.4), the establishment of a single distance education institution (NPHE, 2001:section 4.5) and the non-closure of institutions (NPHE, 2001:section 6.4). The NPHE itself is the third aspect of the **procedures and processes** referred to above.

Problem statement

On studying the National Plan for Higher Education it becomes clear that the ultimate aim of the reconfiguring of the system is to achieve a new institutional landscape. This aim would be difficult, if not impossible, to achieve without the combining of at least some of the existing higher education institutions.

The majority of the responses to the SS Report of 30 June 2000