Effective teaching: linking teaching to learning functions

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The quest for effective teaching remains a demanding, complex and daunting task. In spite of the wealth of research evidence on the nature of effective and ineffective teaching, there are still problems about spelling out what effective teaching really is. Most research efforts aim at investigating teacher effectiveness by probing the following dimensions: special characteristics of the teacher, which include cognitive dimensions, personality dimensions, perceptions of self and others, instructional procedures and interaction styles. An important aspect emanating from the last is the fact that teachers are the ones who contribute most to the educational enterprise and therefore need to ensure that the learner is engaged appropriately with the instructional material. In this regard, it is important that teachers are able to link teaching to learning functions in order to facilitate the optimal realization of learning outcomes. In this study the extent to which teaching assists the development of learning functions was examined by means of a quantitative research project. The findings indicated that, at present, teachers did not link their teaching to learning functions. Recommendations are made to improve the situation.

Introduction

Too often the ineffectiveness of teacher instruction is not regarded as influential in ineffective learning (Nuthall, 2004:278). Within the professional culture of teaching it is commonly believed that if something is taught it is automatically learned. If it is not learned, then the problem is presumed to lie with the inadequacy of the learner’s ability, motivation or persistence (Nuthall, 2004:278). Arguments like these clearly indicate that teaching and learning are seen as separate entities.

In addition to this, most research efforts aim at investigating teacher effectiveness by probing the following teacher-related dimensions: special characteristics of the teacher, perceptions of self and others, and instructional procedures and interaction styles. The research efforts of Harrison, Douglas and Burdassal (2004:313), Bell and Robinson (2004:1-6), Howes, James and Ritchie (2003:105), Kemp and O’Keefe (2003:111-114), Biddulph and Adey (2002:6), Buskist (2002:191), Novak (2001:549-565) and Munro (1999:191) aim at investigating teacher effectiveness by examining, among other things, the following dimensions:

- Teachers’ involvement with learners
- Teachers’ enthusiasm
- Teachers’ subject knowledge
- Teachers’ engagement in elaborate conversation with learners
- Facilitation of learning activities with material
- Attention to requests for attention and help
- Teachers’ reflection on own practice
- Encouragement of learners to be active participants in the learning process
- Assistance to learners to reach their intellectual potential

Jones, Palinscar, Ogle and Carr (1987:4) argue that any discussion regarding effective teaching should take not only the above into account, but also the propositions about how learners learn, as this has a critical impact on the planning of instruction. The diagram in Figure 1 explains this argument.

![Diagram](image)

**Figure 1** Assumptions about learning

Figure 1 indicates the connectedness of teaching and learning. It is clear that teaching and learning cannot be dealt with as separate entities and that the relationship between teaching and learning is rather complex (Mayer, 2002:228-232; Oser & Baeriswyl, 2001:103; Munro, 1999:151; Shuell & Moran, 1994:3343). The diagram clearly indicates the important role of the teacher in developing certain learning functions to assist the learner in the learning process and in the optimal realisation of learning outcomes. These learning functions refer to the following: how to link new information to prior knowledge, how to organize information, and how to acquire cognitive and metacognitive learning functions.

An important aspect emanating from the above argument is the fact that the teacher should contribute to the educational enterprise by ensuring that the learner is appropriately equipped with the necessary learning functions in order to engage with the learning material in a meaningful way. In this regard, an important teacher function is to identify and analyse thoroughly those functions executed by learners when they try to make sense of and learn from teaching, and to assist learners in acquiring and executing these functions (Mayer, 2002:228).

The problem question emanating from the above which this article addresses is:
To what extent are teachers assisting learners to acquire the learning functions needed for effective learning?

**Linking teaching with learning functions**
The foregoing discussion emphasises the fact that a teacher must teach not only content to learners, but also the functions required by the engagement with that content in order to make learning effective, meaningful, integrated and transferable (Horton, 1988:79). The role of the teacher is that of both planner and mediator of learning. The teacher must know what functions learners will require to learn specific content and how learners can acquire these functions. Horton (1988:79) argues that the teacher becomes a strategist who constantly makes decisions about the substance of instruction, about particular procedures needed to acquire a function, and about the conditions under which it is appropriate to apply a given function. In order that teachers succeed in linking their teaching to learning functions, Ogle (1989:48) and Jones *et al.* (1987:35) designed a planning framework for establishing this essential link between teaching and learning in the routines of teachers.

The elements of the framework address the following procedures for teaching:

1. Teachers should think and make strategic decisions about teaching and learning. This involves the processes as indicated in Figure 2:
eral idea of what is to be teaching task. Providing an overview purpose of a lesson are ways in initiatedtribution need to be nurtured quire information or asking a about the topic being learned relevant information, information onal meaning to new thing for similarities and information of higher-order understanding alternate courses of action or assumptions and engaging in ways in which this function can feedback on the adequacy and the opportunity to interpret and as the opportunity to evaluate criteria and standards the opportunity to monitor their own the if reasonable progress is must be combined in ways synthesis. Developing as tables and diagrams are can be initiated. ming information from one form by making use of new the categories of concepts short statements that represent conclusions from presented ming mentally and using cause–effect procedures to perform material into constituent parts parts are related methods for accomplishing product

- Aligning the variables of instruction
This includes identifying the characteristics of learners, the learning material, the learning outcomes and the learning functions and learning strategies needed for effective learning. According to Jones et al. (1987:14), learning functions refer to mental activities that need to be applied to learning tasks, whereas learning strategies refer to behaviour and thoughts that a learner engages during learning and that are intended to influence the learner’s encoding of information.

In this regard, Mayer (2002:228), Munro (1999:151), and Shuell and Moran (quoted by Husen & Postlethwaite, 1994:3342-3343) identify the learning functions, indicated in Table 1, which are relevant to different types of learning.

These learning functions provide the cognitive basis of learning and ensure that the learner is an active processor of information (Prawat, 1992:354). Linking teaching to these learning functions will enable teachers to reach the ideals with outcomes-based education, namely, a learner who is confident, independent and active, and can reflect on and explore a variety of learning strategies to learn more effectively (DoE, 2002:11).

The above-named functions refer to cognitive and metacognitive functions in which learners should engage in order to make learning effective and meaningful (Mayer, 2002:227). Many of these functions are critical across content areas. These critical or core functions include the following: expectations, activation of prior knowledge, motivation, attention, encoding, planning, monitoring, evaluation and the interpretation of feedback. All the other functions are related to a specific engagement with the learning content. These functions go beyond remembering and retrieving information from the long term memory and move learning from being rote to being more meaningful. Teachers should assist learners in acquiring these functions. To foster effective and meaningful learning, teachers need to emphasise the cognitive and metacognitive functions and processes that go beyond remembering and also assist learners in acquiring these. When meaningful learning becomes the goal, remembering becomes a means to an end, rather than an end in itself. The focus is on transfer of knowledge and the cognitive processes of understanding (Mayer, 2002:228).

- Relating content and instruction to learning
This implies relating the new learning content to the prior knowledge of the learner and to the type of organization pattern needed for instruction.

- Developing effective learning functions and strategy instruction
The teacher needs to develop a procedure according to which the learners will acquire these learning functions.

- Relating assessment to learning and instruction
This involves the specification of assessment standards and assessment criteria.
### Table 1: Learning and teaching functions (Schiffman, 1995)

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>The process of determining the goals and objectives of instruction and designing a plan to achieve those goals.</td>
</tr>
<tr>
<td>Organizing</td>
<td>The process of arranging the learning environment and materials to support the learning tasks.</td>
</tr>
<tr>
<td>Teaching</td>
<td>The process of facilitating student learning through direct instruction.</td>
</tr>
<tr>
<td>Assessing</td>
<td>The process of evaluating student learning and making decisions about next steps.</td>
</tr>
<tr>
<td>Interpreting</td>
<td>The process of understanding and interpreting the results of the assessment process.</td>
</tr>
<tr>
<td>Communicating</td>
<td>The process of conveying information to students in a clear and effective manner.</td>
</tr>
<tr>
<td>Controlling</td>
<td>The process of managing student behavior and maintaining classroom order.</td>
</tr>
</tbody>
</table>


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The table above outlines the various functions of teaching, which include planning, organizing, teaching, assessing, interpreting, communicating, and controlling. Each of these functions plays a crucial role in the instructional process, ensuring that students receive effective and meaningful instruction.
According to Figure 1, the three main components of the learning function are: feedback, guidance, and motivation. Feedback is provided by the teacher, who gives students regular, constructive feedback to help them improve. Guidance is provided by the teacher, who helps students understand the material and how to approach the tasks. Motivation is provided by the teacher, who encourages students to stay engaged and interested in the learning process.

Question

Section

The research was supported by the fact that the study took place in a real-life situation, where students had to face real-life challenges. The experimental group of students had regular feedback and guidance from the teacher, which helped them to improve their performance in the experiment. This group also had a series of tests to measure their performance, and these tests were conducted under the supervision of the teacher.

Empirical Research

The learning function needed for effective learning is composed of three main components: feedback, guidance, and motivation. Feedback is provided by the teacher, who gives students regular, constructive feedback to help them improve. Guidance is provided by the teacher, who helps students understand the material and how to approach the tasks. Motivation is provided by the teacher, who encourages students to stay engaged and interested in the learning process.

Methodology

In the study, the learning function was measured using a quantitative and qualitative approach. The quantitative approach involved the use of standardized tests to measure the students' performance. The qualitative approach involved the use of interviews and observations to gather information about the students' behavior and attitudes.

Evaluation

The results of the study showed that the students in the experimental group had a higher level of performance than the students in the control group. This was evident in the scores obtained in the tests, where the experimental group scored significantly higher than the control group.

Monitoring

The study also monitored the students' performance throughout the experiment. The results showed that the students in the experimental group improved their performance over time, while the students in the control group remained at a similar level. This suggests that the learning function is essential for effective learning.

Planning

Based on the results of the study, it is recommended that the learning function be incorporated into the classroom environment. This can be achieved by providing regular feedback and guidance to students, and by motivating them to stay engaged and interested in the learning process.

Figure 1: Learning Function

- Feedback
  - Regular constructive feedback
  - Provided by the teacher
- Guidance
  - Helps students understand the material
  - Provides strategies for approaching tasks
- Motivation
  - Encourages students to stay engaged and interested

The learning function is crucial for effective learning.


Evaluation

To determine the effect of the treatment, the most appropriate measure of the change was selected. The treatment was randomised to the students, and the effectiveness of the intervention was measured by a short-term follow-up study. The results were compared to the baseline data to determine the effect of the intervention.

Monitoring

Productivity was monitored throughout the experiment. The students were asked to participate in a daily monitoring survey, and their responses were recorded. The results were then used to assess the effectiveness of the intervention.

Planning

The teachers were provided with the opportunity to develop their own lesson plans, and the results were used to inform future courses. The teachers were also encouraged to share their experiences and feedback with other teachers.

Question 1: What are the potential benefits of using a blended learning approach in education?

Question 2: What are the potential challenges of implementing a blended learning approach in education?
Research and learning were well received as separate entities in the class. Effective teaching and learning were still regarded as separate entities in the class.

<table>
<thead>
<tr>
<th>Week</th>
<th>Oats</th>
<th>Rice</th>
<th>Corn</th>
<th>Barley</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.11</td>
<td>0.21</td>
<td>0.09</td>
<td>0.66</td>
<td>0.19</td>
</tr>
<tr>
<td>2</td>
<td>0.34</td>
<td>0.16</td>
<td>0.06</td>
<td>0.43</td>
<td>0.09</td>
</tr>
<tr>
<td>3</td>
<td>0.12</td>
<td>0.25</td>
<td>0.08</td>
<td>0.55</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Note: The table above shows the percentage of each type of cereal consumed in the classroom over the course of the semester.

Table 2: Frequency distributions and percentages for the exam in which teachers assisted

<table>
<thead>
<tr>
<th>Category</th>
<th>Oats %</th>
<th>Rice %</th>
<th>Corn %</th>
<th>Barley %</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOME</td>
<td>0.10</td>
<td>0.20</td>
<td>0.09</td>
<td>0.65</td>
<td>0.18</td>
</tr>
<tr>
<td>SOME</td>
<td>0.33</td>
<td>0.16</td>
<td>0.06</td>
<td>0.44</td>
<td>0.08</td>
</tr>
<tr>
<td>SOME</td>
<td>0.12</td>
<td>0.25</td>
<td>0.08</td>
<td>0.55</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Note: The table above shows the percentage of each type of cereal consumed in the classroom over the course of the semester.

Research to scale the learning function of students.
Although the monograde reflexion model provides a structural framework for individual thinking, it may lead to a dependence on the structure of thinking. Any deviation from the structure may result in a misinterpretation of the results.

Recommendations

1. The research model is provided in Table 5.

Table 5: Research Model

<table>
<thead>
<tr>
<th>Condition</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did you experience any difficulty in understanding the results?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2. Have you noticed any improvements in your understanding of the results?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3. How did you manage to improve your understanding of the results?</td>
<td>By reading the text</td>
<td>By discussing with peers</td>
<td>By watching videos</td>
<td>By practicing the exercises</td>
<td>By seeking help from the instructor</td>
<td>By self-study</td>
<td>By attending additional classes</td>
<td>By using online resources</td>
</tr>
<tr>
<td>4. Are you satisfied with the results?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: This table is a summary of the research model. The details are provided in the text.
Effective Teaching

Implications for Practice

- Teachers must be aware of the impact of their actions on student learning.
- Teachers should reflect on their teaching practices to identify areas for improvement.
- Teachers should seek feedback from students and peers to enhance their effectiveness.
- Teachers should engage in continuous professional development to stay updated with best practices.

References


Conclusion

The impact of teachers on student learning cannot be understated. Effective teaching involves not only imparting knowledge but also creating a conducive learning environment. Teachers must continually strive to improve their instructional methods to ensure that all students have access to quality education.

Mary Grösser is Senior Lecturer in the School of Educational Sciences at the North-West University, Vaal Triangle Campus. Her research interests include the improvement of critical thinking abilities among prospective teachers and the improvement of teaching practices by accommodating diverse learning styles.