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# Prototyping in Language Testing: An Overview of Prototyping in Language Testing

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**ABSTRACT**

***Assessment is a considerable section of teaching and learning. Reliable assessments indicates the usefulness of teaching methods, materials, and students' progress and skills. A prototype (proto means initial/first and type means version/category/sample) is the first working model which serves as a model on which successors are based and it is a part of assessment. Prototyping is usually considered as an integral part of the product design development process, where it is believed to reduce project risk and cost. In this study, different terms of prototyping, the importance of prototyping, the practical methods of prototyping, advantages and disadvantages of prototyping were taken into account.***

**KEYWORDS**:prototyping, language teaching, language testing, learner behavior

## INTRODUCTION

Assessment is a considerable section of teaching and learning. Also, it can be considered as an inseparable section in this process. Reliable assessments indicates the usefulness of teaching methods, materials, and students' progress and skills. Besides, they can provide an opportunity for giving feedback that can be utilized to enhance teaching and learning. Accurate assessment instruments can improve educators' comprehension of learners' performances. Ultimately, teachers can be advantageous from a good foundation in test design and interpretation, for the information they obtain from assessment devices assist in their decision-making and teaching strategies.

Based on the various advantages of testing and assessment, it should be prepared very well. In different fields like as education and industry, always, there is a lot of doubtfulness as to whether a new concept, model, or design products and stuffs from industry and assessment means from education, will actually do what is desired. Constructing the full complete product as a test in all respect, design involves two complex factors as they are time-consuming and much more expensive. These two factors have deep influences on require product, especially when product is repeated several times. A prototype (proto means initial/first and type means version/category/sample) is the first working model which serves as a model on which successors are based. It is built to test the function of the new design before starting production of a product (Wohlers, 2010). In a broad form, prototyping has been applied in a lot of engineering fields, such as automobiles, domestic appliances, and consumer electronics.

In this study, based on the role of prototyping in other fields, the theoretical foundation of this concept will be taken into account.

## THEORETICAL FOUNDATION

In the present section, the theoretical framework of prototyping, different terms of prototyping, the importance of prototyping, the practical methods of prototyping, advantages and disadvantages of prototyping are taken into account.

## DEFINITIONS OF PROTOTYPING

Prototype comes from the Greek word prototype, which is sometimes translated as archetype, made up as it is of the two elements proto or first, and typos or type (Fulcher& Davidson, 2007). The meaning of this kind in this sense is of a mould or stamp, from which other examples could be created. The Oxford Dictionary of Businessdefines prototype here as: a preproduction model developed to evaluate the feasibility of new ideas, materials, technology, and design techniques as part of new product development. Besides, the technological evaluation, consumer clinics may be applied to establish the opinion of the potential customers on the acceptability of the product.

As was mentioned above, in language testing, the objective of a prototype is similar to its goal in engineering. What we wish to do is produce an item or task that fulfils a particular function within a larger test. The function of the item or task is to generate a response from which we can make inferences. If we see the language test as a machine that needs designing and building, the first part of the design process is to ensure that the parts fulfil their intended function and contribute towards the working of the whole machine (De Jong, 1988).

The first section of the design phase is referred to as prototyping, it means that, the design and testing of prototypes.Prototyping is usually considered as an integral part of the product design development process, where it is believed to reduce project risk and cost. Often a few prototypes are made initially and each prototype is influenced by the performance of previous designs, in this way deficiencies in design of the product can be corrected.

## DIFFERENT TERMS OF PROTOTYPING

One type of prototyping is "Usability testing" that stresses on link characteristics and directions in computer-based examinations to understand how easy it is to utilize the links and how well testees figure out how to apply them. A small group of testees can supply efficient information about these issues and matters. Subjects are viewed as they interact with a link, and also a questionnaire can be applied to get their feedback.

There are some additional terms which are applied to depict trying out items previous to operational use are "field testing," "item trialing," "pilot testing," "pretesting," and "item tryouts" (Fulcher& Davidson, 2012, p. 282). Sometimes, these terms reveal diverse phases in examining new item kinds, directions, and scoring rubrics to supply feedback to examine developers about their appropriateness and efficacy to evaluate proficiency.

Generally, "Field testing" is more explain than prototyping. In a field study an example of an entire examination is examined to specify its feasibility as a full operational test form (Lancaster, Dodd & Williamson, 2004). However, one of the main purposes of prototyping is to specify the viability of new item types, field testing generally focuses on information about the functioning of the test as a whole, including such issues as test timing and reliability. Usually, field testing is much more costly and time consuming than prototyping because it requires a large number of candidates that is fully representative of the target test population so as to get good item statistics and test timing information.

The terms "item trialing," "pilot testing," "pretesting," and "item tryouts" refer to examining tasks or items on a large adequate representative sample of the test population to provide information about item features like as discrimination and difficulty (Fulcher& Davidson, 2012, p. 282). These tryouts may be section of a prototyping attempt or may be section of operational test maintenance. Pretesting and item tryouts are for trying out particular exemplars of item types and tasks that already exist in the operational test specifications. The particular exemplars in the tryouts are analyzed for how well they perform as individual exemplars of the item types in use. Items with poor performance at this phase are revised or replaced. For these tryouts the sample of testees must be large enough and representative enough to provide such statistics. This objective is different from one of the main objectives of prototyping, which is to specify how well a proposed new item type or task works before it is regarded for operational use.

## FIELD TESTING

According to Bachman and Palmer (1996), field testing is defined as to test a device or a product under different conditions of actual use. In other words, it is often described as *product use testing* with users from the target market. At this stage the prototypes have been extensively tested and refined in alpha and beta testing, but this does not mean that there are no further changes to be made, or that some items or tasks will not be eliminated from the mix at this point. However, taking tasks to field testing implies that initial decisions have been taken about the range and number of task types that should be included on a prototype test, rather than the prototyping individual task or item types. In field testing, the items and tasks are still under investigation, but they are considered in the context of the larger product of which they are a component part.

The primary purpose of field testing is to construct an initial picture of test validity and reliability. The test is administered to an enough number of examinees (this number varies depending on the kind of statistical analyses that are carried out), and the raw data is applied in the psychometric analysis.

For developing the TOEFL Internet-based test IBT that was launched in late 2005, it can be viewed the design process through prototyping to field testing as it was understood five years earlier in (Cumming, Kantor, Powers, Santos & Taylor, 2000). This document regards the constructs to be measured and the variables that the investigators thought could be operationalized in a set of tasks for which difficulty drivers could be established. A task model and reader–writer model are laid out briefly, and a research agenda set for prototyping and field testing. One of the new

task types developed for the TOEFL iBT was the integrated academic reading–writing task, which was hypothesized to have significant washback on the academic writing classroom (ibid.: 28).

## ITEM TRAILING

In the production of test materials, the trialing of newly written test materials before publication, development, and operational administration in order to specify their appropriateness or effectiveness and to specify the reactions of the test takers to the materials. The basic objective of test-trialing is gathering information on the test usefulness of the test for the purpose of making revisions in the test itself and in the procedures in administering it, rather than to make inferences about individuals.

## PILOT TESTING

Pilot testing is a small-scale trial, where a few examinees take the test and comment on the mechanics of the test (De Jong, 1988). A pilot study is a standard scientific tool for research that allowing researcher to conduct a preliminary analysis before committing to a full-blown study. The researchers point out any problems with the test instructions, instances where items are not clear, and formatting and other typographical errors and/or issues. In the case of computer-based testing, pilot-test examinees also comment on any issues with the computer interface. Once all issues with the test items and forms have been addressed, the tests are ready for large-scale field testing.

A pilot study may address different issues. As part of the research strategy the following factors can be resolved prior to the basic study:

- Examine that the instructions given to researchers comprehensible;
- Examine that researchers and technicians are adequately skilled in the procedures;
- Examine the correct test operation;
- Examine the reliability and validity of outcomes
- Detect a floor or ceiling effect (e.g. if a task is too difficult or too easy there will be skewed results) (Grenda, 2006).

## THE IMPORTANCE OF PROTOTYPING

Nowadays, the fundamental objective of learners' assessment is to evaluate the students' knowledge about a matter and it provide a compelling view of the future of educational assessment, a future that involves better information about learner acquiring and performance consistent with our comprehensions of cognitive domains and of how learners acquire. Also, that future promises a much tighter assessment and instruction merging. Understanding these aspirations relates to progress in the cognition fields, technology, and assessment, in addition to important shifts in educational policy at local and national levels (Technology and Assessment: Thinking Ahead – (Grenda, 2006)". In educational testing, it is fundamental to make clear the constructs that are the assessment targets. Often standardized assessments have been described as hidden and irrelevant to the test taker. Educational testing specialists have the belief that most of the International standardized Tests are problematic, in part, because task types like as analogies are puzzle-like, limited in scope, and not directly linked to any frameworks. Therefore, contends that preparing for such tests distracts learners and teachers from concentrating on the significant learning purposes articulated in content standards and access to the secrets of these tests is not equitably distributed in all societies.

To construct basic standardized assessments more obvious to learners and teachers, with the objective of changing the concentration from the tasks themselves to the constructs they evaluate. Prototype for a new educational assessments are being applied in modern digital age to assess the all kinds of validity, perceived authenticity, and educational appropriateness of these prototype for evaluating learners achievements and proficiencies in diverse participants. The assessment developer item as prototype must obviously regard the following:

- **The Domain**

What skills and concepts form the domain, how are the different elements relevant, and how are they represented? The domain representation becomes the means to have a communication, through the assessment process, the valued nature of understanding.

- **The Evidence**

What are the data that would lead one to believe that a leaner performed, as a matter of a fact, comprehend some section of the domain model? What would a learner have to prove to indicate that he or she could carry out at a

designated accomplishment level? Explaining what the evidence should be is significant, not only for the tasks forms but also to assist learners to comprehend in very clear ways is what expected.

- **The Tasks**

In the domain and evidence needs, the tasks of assessment can be improved. If the tasks are driven by such needs, there is a much greater likelihood that the tasks will be regarded, related, and representative. the path of moving from domain, to evidence, to task should be noted and is quite different from many traditional test-development practices.

These domain, the evidence, and the tasks, form Evidence Centered Design framework. The items or tasks are the elements of an assessment or test. Each item is the prototype for the test.

- **Practical Methods of Prototyping**

The forms of prototyping provide an important link between theory and practice. It transforms ideas into practical form. It makes strong the piloting and field studies.

1) Alpha Testing

According to Fulcher and Davidson (2007), it is in-house testing. The alpha testing objective is to remove faults/errors in stems, options, item context and so on through expert judgment. Each item is reviewed by specialists' individually and by group of experts.

1.1. Item Review

The group leader—chief conduct item review by cross item reviewing among item writers.
Faulty items will be revised by the item writers. Ultimately, the whole items are reviewed by the chief.

1.2. Panel Item Review

All item writers meet and review all prototypes items by the assistance of item writing specialists, Psychometrician, subject teachers, and personals from testing service

2) Beta Testing

The aim of beta testing is to test items with learners of specified subject and grade. Beta testing apply to make sure expected difficulty level, discrimination, and test format.

2.1. Try out/spot testing

The items selected by panel review tryout—spot testing, on a small group of learners. All items are divided in to small groups of items (approximately 10-20). Each group of item is tryout on five to ten learners only.

2.2. Tryout Data Analyses

The basic objective of data analyses of tryout data is to examine the items quality based on the contents and competencies to be evaluated.

## MERITS OF PROTOTYPING

According to Fulcher and Davidson (2012), prototyping includes some benefits. They are as:

- Aid to specify any problems with the efficacy of earlier design, needs analysis and coding activities
- Assist to refine the potential risks related to the delivery of the system being developed
- Early visibility of the prototype gives an idea of what the final assessment looks like
- Cost effective (Development costs reduced)
- Enhance system development speed
- Fully functional testing before any commitment to tooling
- Encourages active participation of students
- May attract funding
- Make able a higher output for funding agencies.
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## DEMERITS OF PROTOTYPING

Fulcher and Davidson (2012) point out the disadvantages of prototyping:

- Possibility of causing systems to be left unfinished
- Possibility of implementing systems before they are read
- Project management difficulties.

## CONCLUSION

This study presented a review of literature of prototyping. Accordingly, prototyping is a preproduction model developed to evaluate the feasibility of new ideas, materials, technology, and design techniques as part of new

product development. Prototyping is usually considered as an integral part of the product design development process, where it is believed to reduce project risk and cost. There are some additional terms which are applied to depict trying out items previous to operational use are "field testing," "item trialing," "pilot testing," "pretesting," and "item tryouts". Prototype for a new educational assessments are being applied in modern digital age to assess the all kinds of validity, perceived authenticity, and educational appropriateness of these prototype for evaluating learners achievements and proficiencies in diverse participants. Alpha testing and Beta testing are two types of practical methods in prototyping.

Conflict of interest
The authors declare no conflict of interest.

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