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Research Paper

Construction and validation of Reflective Teaching Scale

* **Pratibha Tripathi**, *Research Scholar*
Prof. Bharat Joshi, *Senior Professor*
Faculty of Education (IASE)
Gujarat Vidyapith, Ahmedabad
Email-pratibhamdixit@gmail.com, Mob.-9427800514

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Abstract

This research paper provides a detail narration about the procedure of construction and validation of Reflective Teaching Scale (RTS) which is based on Teggrat theory of reflective teaching having three levels of reflective teaching named: Technical Level (TL) subscale, Contextual Level (CL) subscale and Dialectical Level (DL). RTS was constructed in Gujarati language following Likert method. There were 48 items and five points to response at each item. The reliability and validity of the scale are established.

Introduction

Reflective teaching is always in a high concern to secure a fruitful teaching learning process. In professional education, the practice of reflection is a main tendency in considering good teaching and learning practices. A teacher has a great role to perform in this context. If a teacher is reflective, then classroom teaching may be reflective. It should be always in priority to orient and train our in-service as well as pre-service teachers to ensure reflective teaching in their classrooms. To know the level of reflective teaching practices, reliable and valid tools are always in demand hence the present study was conducted.

Reflective teaching and its importance in education

Reflection stands for a process of looking back or reviewing past actions, evaluating concurrent behaviour, and judging its outcomes. Teaching considers as a well-structured combination of different activities that a teacher uses to create learning environment, motivate students to learn and try to inculcate knowledge, values as well as skills among his/her students.

Ahmad (2008, p.428) defined reflective teaching as an approach to teaching characterized by thorough understanding of students the way they learn. This may lead to changes and improvements in his/her teaching quality. This term is used to describe the way teachers observe their own works in the context of teaching. The reflective practice is a cyclical process, because once we start to implement changes, then the reflective and evaluative cycle begins again. As a result of reflection, the teacher may decide to do something in a different way or may just decide that what she/he has been doing is the best way (Mathew, et.al.2017). Reflective teaching considered as a useful method for teachers and student teachers to generate and explore their concerns about the quality of their teaching and students learning. The outcomes of the adoption of this approach are fruitful. The aim of reflective teacher education is to develop student teachers' reasoning about why and how they implement certain instructional strategies and how they can improve their teaching to have positive effect on students. These reflective activities or practices are known as Reflective Teaching. Reflective teaching is important to assure the desired outcome of teaching. Reflective teaching practice entails an ongoing examination of beliefs, and practices, their origins and their impacts on the teacher, the pupils, and the learning process (Stanley 1998). Most studies in this area show that reflection can increase the teachers' ability to deliver learning material, have better teacher-student relationships and develop classroom management skills (Yanuarti and Treagust, 2016).

Studies showed that reflective teaching is positively associated with Achievement, self-efficacy, understating the learner and planning curriculum and management of teaching behaviour (Kheirzadeh & Sistani, 2018; Mathew, et.al.2017). Narrating the importance of reflective practices in teaching, Shandomo (20) says, "From years of reading reflective projects, I have concluded that the primary benefit of reflective practice for teacher candidates is a deep understanding of their teaching styles and an ability to define how they will grow toward greater effectiveness as teachers. Other benefits include validation or repudiation of teachers' ideals, challenges to traditional modes of practice, the recognition of teaching as artistry, and respect for diversity in applying theory to classroom practice." The aim of reflective teacher education is to develop student teachers' reasoning about why and how they implement certain instructional strategies and how they can improve their teaching to have positive effect on students.

Taggart and Wilson theory of reflective teaching and its levels

Taggart and Wilson (2005) proposed three levels of reflective teaching that teachers can use to facilitate a reflective teaching in their classroom. These reflective teaching levels are denoted as technical level, contextual level, and dialectical Level. The construction of the scale is based on these levels.

Technical Level: It is first level of reflective thinking. Reference of past experiences; teacher competency towards meeting outcomes; focus on behaviour, and skilfully theoretical description or content delivery are the focused areas at this level. Outcomes for practitioners reflecting at a technical level may involve appropriate selection and implementation of lessons to achieve objectives. Acquisition of skills and technical knowledge is important, as are methodological awareness and ability to implement a present lesson.

Contextual Level: A second level of reflection involves reflections regarding clarification of and elaboration on underlying assumptions and predispositions of classroom practice as well as consequences of strategies used. The contextual mode deals with pedagogical matters as examined relative to a relationship between theory and practice.

Dialectical Level: At this level teacher reflects to addresses moral, ethical, or socio-political issues; disciplined inquiry; individual autonomy; and self-understanding. This is third and highest level of reflectivity. It deals with the questioning of moral and ethical issues related directly and indirectly to teaching practices. At this level, practitioners contemplate ethical and political concerns relative to instructional planning. Practitioners are concerned with worth of knowledge and social circumstances useful to students without personal bias.

Construction of RTS

RTS was constructed in Gujarati language to measure the level of reflective teaching of secondary student-teachers. Six major steps have been followed to construct the RTS.

1. It was decided to construct the Likert type scale in Gujarati based on the concept of RT, primarily explained by Taggart and Wilson (2005).
2. **Item writing.** Items were written based on the characteristics and traits associated with levels of reflective teaching. Based on the review of related literature, characteristics and traits associated with different levels of reflective teaching were classified in four components. These characteristics/traits are derived from the pioneer research work of Taggart and Wilson (2005). A classification of the characteristics/traits associated with different levels of reflective teaching scale is given in Table-1.

Table -1

Levels of reflective teaching scale and their components

Levels/ components	Technical Level (TL)	Contextual Level (CL)	Dialectical Level (DL)
1	Reference past experiences	Looks at alternative practises	Addresses moral, ethical, or Socio-political issues
2	Teacher competency towards meeting outcomes	Choices based on knowledge and value commitment	Disciplined Inquiry
3	Focus on behaviour/ content/skill	Content related to context/students need; analysis, clarification	Individual autonomy
4	Simple, theoretical description	Validation of principals	Self-understanding

Based on the above characteristics, total 60 items were written in the first draft of the RTS. Out of 60 items(20 items for each level) were written for RTS.

- Logical Review and IOCI.** First draft of the scale containing three subscales, was given to 10 secondary student teachers for their opinion about items. Based on their opinion, it was found that all items were enough clear to understand its meaning and language. After this procedure, first draft of the RTS was given to five experts to know the usability, celerity, and content validity of the items. They were requested to provide any one score from +1, -1, or 0 for each item to show their consent to say that item is enough clear and appropriate to measure for which it is written(+1), item is not clear and not appropriate to measure for which it is written(-1), and item is not enough clear to say anything (0). They were also requested to give their suggestions to make corrections in the written items.

Based on experts' opinion, corrections were done in eight items and 12 items were removed from the first draft of the scale. According to experts, rest 48 items of the scale found fit to measure the levels of different types of Reflective Teachings of secondary students-teachers. In this way, second draft of the RTS was prepared.

4. Try out of the first draft of RTS. To examine the discrimination power of the items, try out of the scale was done. To try out of the scale, total 289 secondary student teachers from secondary teacher training institutes of Kadi Sarva Viswavidyalay, Gandhinagar were selected randomly. There were 91 male and 198 female secondary student teachers in the sample. Total 231 participants were Under Graduate and 58 were Post Graduate students among 289 secondary student teachers. Among 289 secondary student teachers there were 150, 19, 80 and 40 participants related with Math-Science, Commerce, languages and Social Science related teaching methods respectively. Data were collected from the student teachers of academic year 2018-19. To know the discrimination power of items three steps, suggested by Gupta (2005, p.309), were followed. These steps were-

1. A data sheet was prepared in MsExcel program. There were 48 items in the second draft of RTS. There was a possibility to achieve maximum five and minimum one score on the RTS for each item by each respondent. In this way, each respondent had the chance to achieve maximum 240($48 \times 5 = 240$) score and minimum 48($48 \times 1 = 48$) on the RTS. The total score was calculated for each respondent. Based on the total scores, data was arranged in descending order.
2. In second step, respondents were classified in high achiever group (27% highest scoring responses) and low achiever group (27% lowest scoring responses) respectively.
3. The mean and SD value for each item of RTS were calculated for both high achiever and low achiever groups. To know the discrimination power of each item t-value was calculated. The examination of the significance of difference was calculated at 0.01 level. Two criteria were determined to accept the items for final form of RT Scale. The first criterion was that the only those items would be selected in final form of the scale which have significant discrimination value at 0.01 significance level. In second criterion, it was decided that there would be at least one item for each characteristics of different levels of reflective teaching. Result of the calculation shown that the t-value for all 48 items ranged between 5.13 to 10.54. All these values were significant at 0.01 level. Based on above said criteria all 48 items were found fit and selected for final form of the RTS.

Reliability of RT Scale

Cronback Alpha and Split-half reliability (for whole scale using spearman brown formula) was calculated with the help of NRT programme (Rathor,2000). The details of scale reliability value for RTS and its subscales are given in table 2.

Table 2: Reliability of RTS and Its Subscales

Scale/Subscales	Number of Items	Reliability technique	Reliability value
RT Scale	48	Cronback Alpha	0.93
		Split-half reliability	0.94
TLRT Subscale	16	Cronback Alpha	0.81
		Split-half reliability	0.82
CLRT Subscale	16	Cronback Alpha	0.85
		Split-half reliability	0.86
DLRT Subscale	16	Cronback Alpha	0.83
		Split-half reliability	0.85

Table 2 shows that the values of Cronback Alpha reliability and Split-half reliability were 0.93 and 0.94 respectively for RTS. Both reliability values were showing high reliability of scale to measure secondary student teachers' reflective teaching. Reliability for subscales of RTS was also calculated. According to table 3 the Cronback Alpha and Split-half reliability values were 0.81 and 0.82 for TLRT Subscale, 0.85 and 0.86 for CLRT and 0.83 and 0.85 for DLRT subscale respectively. These reliability values also showed the high reliability of the subscales.

Validity of the Scale

To establish the validity of the RTS content validity and Cliffs' consistency index 'C' of the scale were calculated. To establish its content validity RTS was given to five experts for their opinion. Experts' opinions were showing the content validity of the RTS. According to experts' opinions, all items were found fit to measure secondary student teachers' level of reflective teaching.

Cliffs' consistency indice 'C', based on graph theory, is a measure of unidimensionality that show the consistency of the measurement. Cliffs' consistency index 'C' was calculated with the help of NRT program developed by Rathod (2000). The value of Cliffs' consistency indice 'C' for RTS was 0.41. The possible value of Cliff's C index is between 0 to 1. Joshi (cited by George , 2017, p.103) found that the average value of the 'C' index was found to be 0.32. So the value of Cliffs' consistency index 'C' of RTS shows that RTS was valid.

Cliffs' consistency index 'C' was calculated separately for TLRT, CLRT, and DLRT subscales of RTS too. The value of index 'C' were 0.42, 0.38 and 0.47 for TLRT, CLRT, and DLRT subscales of

RTS respectively. In this way RTS was found valid for measuring reflective teaching levels of prospective secondary teachers based on Face validity and Cliffs' consistency index 'C'.

Findings

The following findings were revealed:

1. A scale to measure reflective teaching level was constructed.
2. The reliability and validity of the RTS were established.
3. A, scale with three levels to measure reflective teaching, was made available in Gujarati language.

Conclusion

A valid tool in the field of education is always in high demand. RTS is a scientifically constructed and validated tool. The scale made available here in the present study, shall pave a path for the future studies and researchers. RTS has potential to measure the different levels of reflective teaching of teacher.

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*** Corresponding Author**
Pratibha Tripathi, *Research Scholar*
Prof. Bharat Joshi, *Senior Professor*
Faculty of Education (IASE)
Gujarat Vidyapith, Ahmedabad
Email-pratibhamdixit@gmail.com, Mob.-9427800514