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Research Paper

Adaptation and Validation of a Measure for Evaluating Teacher Adaptability in English Teaching Higher Education

Shakiba Rostami * **Mansoor Tavakoli** **
Zahra Amirian ***

Abstract

Adaptive teaching addresses students' diversity and their immediate learning needs. Particularly, in the high-interactive context of English teaching, fostering adaptive teaching in teacher professional development programs not only stimulates teacher change at the micro level but also facilitates implementing the organizational and curricular innovations imposed by authorities at the macro level. The current English teaching literature lacks a measure for evaluating and fostering adaptive teaching within higher education. Hence, within the present study, the Interconnected Model of Teacher Professional Growth (IMTPG) was adapted and validated as a measure for evaluating and fostering teacher adaptability for 181 international English teachers in higher education. Structural Equation Modelling (SEM) was employed for validating two different enactment and reflection paths in the original IMTPG, and the final adapted IMTPG for adaptive teaching (AT-IMTPG) was proposed. The AT-IMTPG can be applied for evaluating how adaptive English teachers are, seeking to resolve the problem of implementing educational innovations by English teachers in higher education. It can also be used to design teacher professional growth programs for fostering adaptive teaching within English teaching higher education. Such a change in the classroom level is hoped to be translated into an educational change in English teaching higher education.

Keywords: Teacher professional development, Teacher change, Adaptive teaching, Structural equation modeling, Confirmatory factor analysis

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* Ph.D. Candidate, Department of English Language and Literature, University of Isfahan, Isfahan, Iran, s.rostami@fgn.ui.ac.ir
** Professor, Department of English Language and Literature, University of Isfahan, Isfahan, Iran, tavakoli@fgn.ui.ac.ir (Corresponding author)
*** Associate Professor, Department of English Language and Literature, University of Isfahan, Isfahan, Iran, z.amirian@fgn.ui.ac.ir

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Implementing educational innovations in higher education requires teachers to deal with learner diversity. According to Borich (2011), through adaptive teaching, the learner diversity problem can be resolved. Appropriately grounded in literature, adaptive teaching is considered to be a gold standard for effective teaching (Bransford, et al., 2000; Darling-Hammond & Bransford, 2005). An adaptive teacher employs different instructional strategies for diverse groups of students by finding a common instructional goal with learners. During this adaptation process, teachers monitor their thinking to find what is the best way to adapt (Duffy et al., 2009).

Besides assisting in tackling everyday challenges of the classroom context, and dealing with the natural diversity of the language learners, adaptive teaching also helps teachers to implement the educational reforms or innovations dictated or proposed by the educational authorities. Implied in the definition of an effective teacher, teachers' success in implementing educational reforms and innovations is closely connected with the idea of teachers' adaptability. As Hattie (2009) defines, an effective teacher is a person who employs pedagogical content knowledge more flexibly and innovatively and is more able to adapt instruction in response to the classroom context. An adaptive teacher can improvise more easily (Hattie, 2009). In this definition, the innovative behavior of the teacher and the adaptation to the contextual features of the classroom are emphasized simultaneously. Therefore, innovation and teacher adaptability are hypothesized to be closely connected, and fostering teacher adaptability is predicted to enhance their implementation of educational innovations.

But the context of English higher education instruction also lacks a unified measure for evaluating English teacher adaptability. Current models, as far as researchers know, are targeted to teachers in general, like the CARE coaching model (Hoffman & Duffy, 2016); have students' adaptability, not teachers', as their goal, like the tripartite model of Martin et al. (2012); or have unified different conceptualizations of teacher adaptability in educational contexts other than English teaching; like Parsons et al. (2018) model for mathematics education.

On the other hand, proposing a measure for fostering adaptability in teachers can be best applied within professional development programs, as the development of teachers' professional competency requires not only experience but also teacher education (Vogt & Rogalla 2009). As almost all the definitions for the construct of teacher adaptability emphasize the interactive nature of teaching, the Teacher Professional Development (TPD) model to be adapted for fostering teacher adaptability needs to be interactive in nature.

In this study, one of the widely used sub-models of the interactive teacher development models, the Interconnected Model of Teacher Professional Growth (hitherto IMTPG) proposed by Clarke and Hollingsworth (2002) was adapted and validated for the English higher education context. This model adopts a *change as growth* perspective, according to which "teachers are themselves learners who work in a learning community" (Clarke & Hollingsworth, 2002, p. 948). It analyzes and supports the processes of teachers' learning, assuming that the change in their prior knowledge emerges from the support and help of an expert. Accordingly, different dimensions of teacher adaptability were extracted from the previous qualitative conceptualization study (processes, consequences, conditions, and consequences of teacher adaptability) to adapt and validate IMTPG for measuring teacher adaptability in the English teaching higher education context. The present study attempts to answer the following questions:

1. How reliable is the adapted Interconnected Teacher Professional Growth Model for higher education English teachers?
2. Can any evidence of construct validity for the adapted Interconnected Model of Teacher Professional Growth in English teaching higher education be demonstrated?

Literature Review

Teacher Adaptability

In general terms, Zimmerman (2002) considers adaptability as a subcategory of self-regulated learning which is defined as "a self-directive, meta-cognitive process by which individuals monitor, direct and control their thoughts and actions in order to meet learning goals, build expertise and improve their skills" (in Holliman et al., 2018, p. 2). Winne and Hadwin (2008) have conceptualized four stages for self-regulation learning, including adaptation as the last stage. These four recursive phases are conceptualized as a loop and include (a) task definition, (b) goal setting and planning, (c) enacting study tactics and strategies, and (d) metacognitively adapting studying. The last stage implies the learner's evaluation of his/her performance and subsequent cognitive and behavioral adjustments (adaptations) for fulfilling learning tasks, and resonates with adaptability conceptualized by Martin et al (2012, 2013). As Winne and Hadwin (2008) declare, "Models of self-regulated learning tend to culminate in an adaptation phase where the individual self-evaluates his/her performance and identifies cognitive and behavioral modifications necessary to improve in the future" (Collie and Martin, 2017, p. 30).

This boarder sense of adaptability resulted in proposing a modified definition, and consecutively the tripartite model of adaptability by Matin et al (2012, 2013).

Accordingly, Martin et al. (2012) conceptualized adaptability as individuals' capacity to "constructively regulate psycho-behavioral functions in response to new, changing, and/or uncertain circumstances, conditions, and situations" (p. 59). Their tripartite model of adaptability included three types of regulations: cognitive, behavioral, and affective, implying adjusting, managing and modifying their cognition (thoughts), behaviour (actions), and affection (emotions), respectively (Martin et al., 2012, 2013). Their model theoretically originated from the life-span theory of control, maintaining that an individual development for the pursual of a goal was successful when his/her goals were adjusted to the constraints and opportunities in the social ecology (Martin et al, 2012). To do this, an individual should control not only the behavioral aspects (primary control) but also the cognitive aspects (secondary control) of goal pursual. These two aspects were supported by compensatory primary control which provided support and alternative courses and actions and compensatory secondary control which reappraised individuals' goals, regulated their aspirations, and altered their expectations. Martin et al. (2012) considered compensatory aspects of this theory to be akin to their conceptualization of adaptability, but they differentiated the whole life-span theory of control from adaptability by its lack of affective regulation and its focus on goal disengagement. They believe that, during adaptation, an individual cannot change the final goal; they can only address the situations and conditions in a way to achieve their ultimate goal. On the contrary, compensatory control of cognitive and behavioral adjustments can stimulate positive outcomes within the environment (Heckhausen, et al., 2010), altering one's actions and thoughts with a view to respond to environmental events effectively (Tomasik et al., 2010, in Collie & Martin 2017).

In an educational context, Anderson (1979) coined the term adaptive education, referring to educational systems including students with different abilities, skills, knowledge, attitudes, and values. "[A]daptation to these differences in educational environment is a necessity and adaptive learning environments provide systems to achieve this" (Kara & Sevim, 2013, in Matei and Gogu 2018, p. 767). The tripartite model of adaptability (Martin et al, 2012) was mostly employed in school and university contexts (Collie et al., 2016; Martin et al., 2012, 2013, 2015), and less for teachers and teaching profession. Hence, Collie and Martin (2017) called for more studies on the instructional adaptation of teachers due to the unique context of classrooms requiring teachers to respond to and manage constant changes during instruction. They refer to Lin et al. (2005) for pinpointing different unique features of classroom context requiring teacher adaptability: different groups of students, different subjects for teaching, and

different classroom events that teachers are dealing with simultaneously (one situation does not arise at a time necessarily).

In the specific context of teaching mathematics, Parsons et al. (2018) employed a mixture of two theories, social constructivism (Vygotsky, 1978) and teacher metacognition (Duffy et al., 2009) for unifying the construct of adaptive teaching. Within this framework, adaptive teaching was conceptualized as a cycle of student stimulus (some indications of their learning, motivation and behavior), teacher reflection and metacognition (interpreting this stimulus and deciding whether and how to respond), and finally, the teacher's action. Teachers' factors, their affordances, and the barriers to their actions were mediating teachers' actions, and their reflection and metacognition. All these elements were enclosed within the context of the classroom. Gallagher et al. (2020) believed that Parsons et al.'s (2018) model lacked enough attention to what happened in the mind of teachers. Therefore, they revised this model by incorporating Jacobs et al (2010)'s model of noticing, which included three levels of teachers' attending to students' thinking, interpreting their thinking, and finally responding to students.

All in all, research on educational adaptation has already been restricted to the theoretical studies for proposing the model or unifying the construct in general (Martin, 2012; 2013) and specific contexts such as mathematics education (Parsons et al. 2018; Gallagher et al. 2020). Experimental studies of designing specific measures for evaluating and fostering this construct have already been overlooked. Developing such measures can particularly put the theoretical studies into the real context of practice, and teacher professional development (TPD) programs can realize this purpose.

Interconnected Model of Teacher Professional Growth (IMTPG)

IMTPG is a measure for assessing teacher professional development in general. It conceptualizes four different domains for teachers' knowledge: their knowledge of external stimuli or external sources of information (*external domain*), their knowledge, beliefs, and attitude (*personal domain*), their professional experimentation (*the domain of practice*), and the salient outcomes they obtain (*the domain of consequence*) (Figure 1).

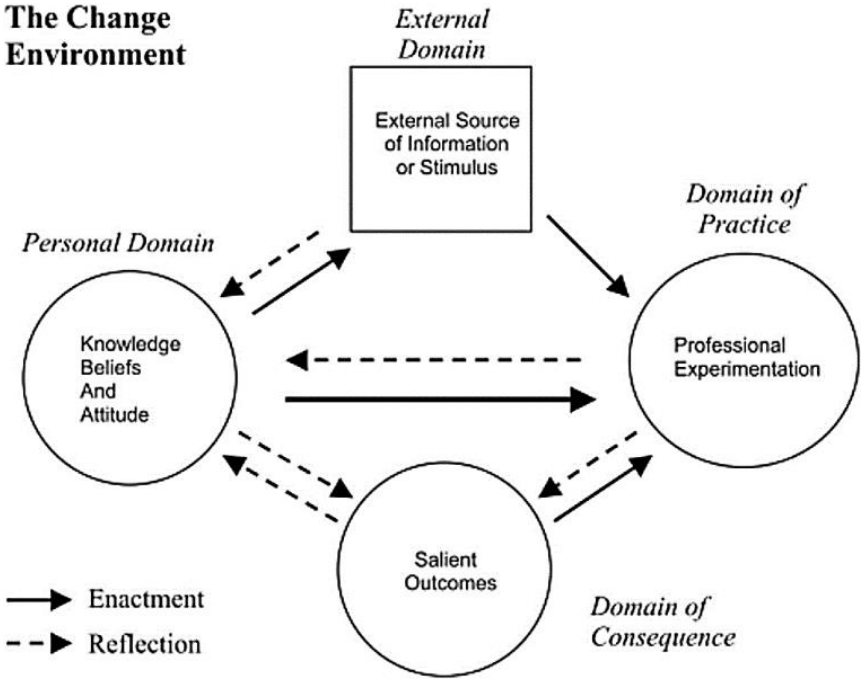

Figure 1. Interconnected Model of (Teacher) Professional Growth (Clarke & Hollingsworth, 2002, p. 951)[1].

These domains interact with each other through two processes of *reflection* and *enactment*. Enactment means translating teachers' beliefs and/or translating a pedagogical model into practice and is different from simple acting. Put another way, every action needs the enactment of some beliefs or pedagogical models. As Clarke and Hollingsworth (2002) assert, "each action represents the enactment of something a teacher knows, believes or has experienced" (p. 951). On the other hand, reflection is defined as "active, persistent and careful consideration" (Dewey, 1910, p. 6). Teacher knowledge develops during enacting what the teacher knows or believes in each of these four domains or when reflecting and considering what is just done as a teacher. In other words, there is a constant reciprocal relationship between enactment and reflection processes during teacher knowledge development.

This model was chosen for the present study, as its four domains could be operationalized in terms of four main dimensions of teacher adaptability specified in the previous phase of the study. Furthermore, its conceptualization of professional learning

[1] Reprinted from Teaching and Teacher Education, 18, Clarke and Hollingsworth, Elaborating a model of teacher professional growth, 947–967, Copyright Elsevier (2002), with permission from Elsevier

as an idiosyncratic and non-linear process, as well as its capability in recognizing the complexity of teacher professional development, by two different reflection and enactment paths (van Driel, et al., 2012), stimulated its application here. As an interactive model of teacher professional change, specifically designed for distinguishing the processes of teacher change, IMTPG can be employed as an instrument in contextualizing TPD programs for the idiosyncratic context of universities, which is emphasized by Jeannin & Hallinger (2018). In addition, it guarantees improved practice in the real context. Recent studies have widely used or adapted IMTPG for their own specific contexts. For instance, van Driel et al. (2012) adapted IMTPG for teacher growth in science education, and Voon et al. (2015) employed it in seamless inquiry science learning (SISL). Even IMTPG was used as an analytical tool for analyzing teacher learning of Lesson Study techniques in mathematics education (Goei & Verhoef, 2015). Moreover, Lomas (2018) has revised IMTPG's *personal domain* recently. It also conforms with the constructivist background (CGT design) of the initial phase of the present study for unifying and dimensionalizing different aspects of teacher adaptability within English teaching higher education. Finally, according to Justi and Van Driel (2006), there are multiple pathways for teacher knowledge development due to different possible reflection and enactment processes between these four domains of the IMTPG. Therefore, it can be inferred that IMTPG can be employed for specific contexts, such as English teaching higher education, with different enactment and reflection parameters depicted in the original IMTPG model.

IMTPG for Adaptive Teaching in English Higher Education

In the qualitative phase of the present study, Schatzman's (1991) dimensional analysis was utilized for operationalizing the construct of teacher adaptability in the specific context of teaching English in higher education. Four dimensions of *process* (teacher's performance for being adaptive), *condition* (factors facilitating or stimulating adaptive teaching), *consequence* (what is ultimately achieved through adaptive teaching), and *context* (factors paving the way for adaptive teaching) were extracted.

The process dimension of adaptive teaching was found to comprise four subdimensions: *reflecting*, *planning*, *evaluating*, and *enactment*. These sub-dimensions were the basic elements of the reflective teaching construct in the literature (Oo & Habók, 2020; Ratminingsih et al., 2018; Richards & Lockhart, 1996), but our previous study revealed that adaptive teaching was more than reflective practice. It included dimensions of *condition*, *consequence*, and *context* as well. Moreover, the four reflective practice sub-

dimensions were parallel with four stages of Kolb's (1984) experiential learning (*concrete experience*, *reflective observation*, *abstract conceptualization*, and *active experimentation*). Additionally, three stages of Janssen's (2003) self-initiated innovative practices (*intentional idea generation*, *idea promotion*, and *idea realization*) were found to be in line with four subdimensions of reflective practice in the previous qualitative phase of the study.

The main two conditions of stimulating and facilitating teacher adaptability in English teaching higher education were found to be teacher's acceptability of change and their eagerness for students' participation and comprehension, following Janssens' (2003) self-initiated innovative behavior and Kolb's (1984) experiential learning respectively.

The overall consequence was found to be improvements in macro, micro, and individual levels (educational context, classroom and student learning, and teachers themselves. Within the literature, different related constructs of *reflective teaching* (Ma & Ren, 2011; Madin & Swanto, 2019); *reflective practices* (Munalim & Gonong, 2019); *adaptive strategies* (El Masry & Alzaanin, 2021); and *innovation* (Thurlings et al., 2015) were already found to result in fostering professional development.

Finally, the context of teacher adaptability was contextualized in a continuous, cyclical, systematic activity. In line with the literature, this context was influenced by teachers' knowledge (Farrell, 2006; Loan 2019; Parsons & Vaughn, 2016; Vagle, 2016); skill (Gun, 2014; Hammond, 2016); and their openness (Gungor, 2016; Parsons & Vaughn, 2016; Salih & Omar, 2022; Thurlings et al., 2015).

To close the interpretive argument, the whole construct of teacher adaptability in English higher education was conceptualized as a cyclical reflective practice within the context of the teacher's knowledge, skill, and openness to change, which leads to an improvement of the teacher's self, instruction and the whole English Language Teaching (ELT), providing that teachers are acceptable to change and are eager for students' participation and comprehension.

After adaptive teaching construct was operationalized, different dimensions of adaptive teaching were assigned to different domains of IMTPG following the definitions proposed by Clarke and Hollingsworth (2002). Accordingly, the process dimension of reflective practices (evaluation, reflection, planning, and teacher enactments) was appointed to the domain of practice. The condition dimension was equated with the external domain. The consequences dimension was assigned to the domain of consequence. The dimension of context was considered the personal domain of IMTPG.

The initial default model of the adapted IMPTG for the present study is presented in Figure 2.

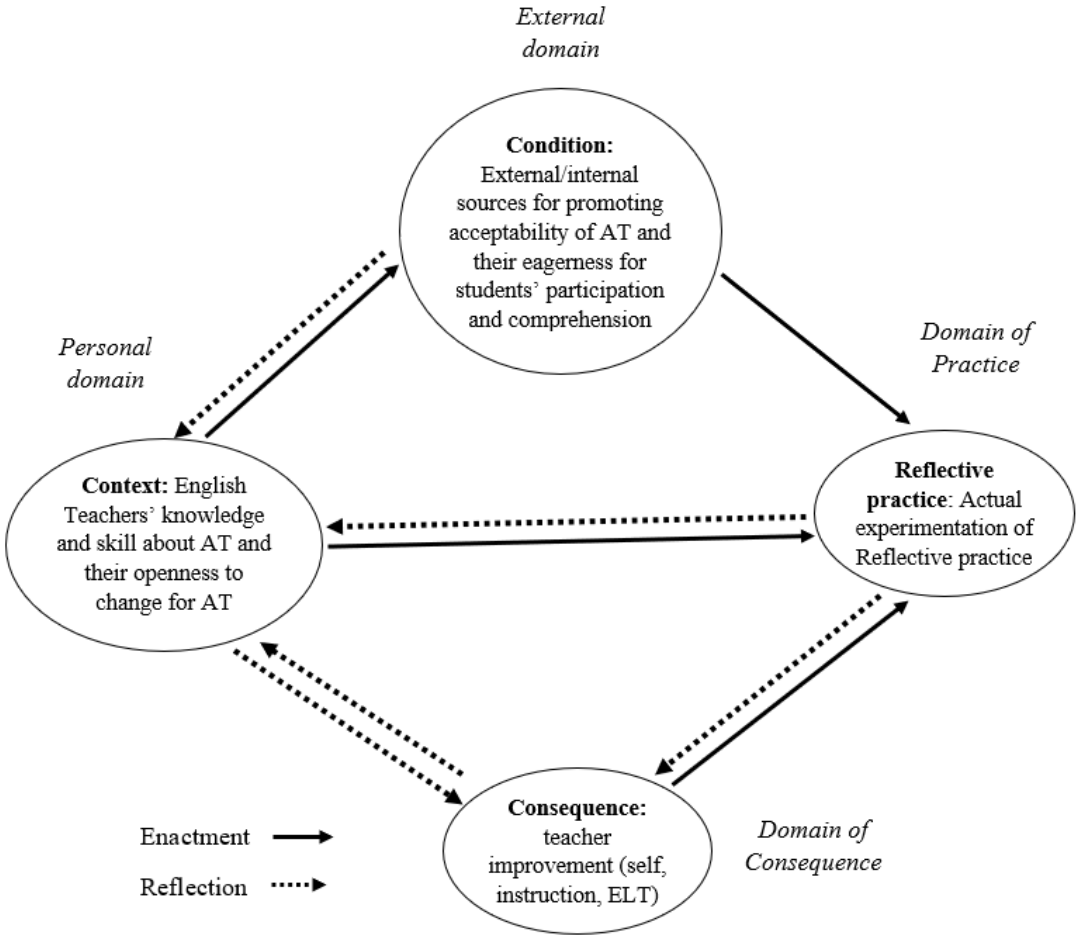

Figure 2. Initial Structural Equation Modelling of the Adapted IMPTG in AMOS 26 (2019)

Method

Design of the Study

The present study is the second, quantitative phase of an exploratory mixed-methods study. In the first qualitative phase of the study, different dimensions of teacher adaptability in the English language teaching context of higher education were specified through a synthesis of the current literature on this construct. The main concepts being proposed by Parsons et al. (2018) and some related key terms (*teacher adaptation*, *teacher adaptability*, *adaptive competency*, *improvisational teaching*, *teacher innovative practice*, *teacher metacognition*, *teacher scaffolding*, *metacognitive teaching*, *teacher*

flexibility; *reflection-in-action*, *critical moments*/*incidents*, *classroom incidents*, *mediated learning*, and *interactive planning*) were employed for searching two databases of Scopus and ERIC (Education Resource Information Centre). Studies published between 2001 and 2022 were selected, including the concepts mentioned above in the context of English teaching in higher education. Constructivist grounded theory (CGT) and dimensional analysis were employed through an interpretive synthesis study to extract different dimensions of teacher adaptability from the final 29 studies. In the present study, through a correlational-descriptive study and employing SEM, IMTPG, as an established teacher professional development model, was adapted and validated for fostering adaptive teaching in the context of English language teaching in higher education. A two-step approach in SEM was adopted. First, the measurement model and then the structural model were examined. For each measurement and structural model, the global and local fit/parameters were first checked.

Item Generation

The initial questions of the survey were generated employing the already specified salient dimensions of the teacher adaptability construct (*process*, *condition*, *context*, *consequence*) in the previous phase of the study. Accordingly, the dimension of the teacher adaptive process includes reflective practices of evaluation, planning, reflecting, and enacting (acting-interacting-modifying). For instance, an item generated for the sub-dimension of evaluating says: *An adaptive teacher evaluates whether appropriate instructional practices are being employed*. In addition, the previous phase of this study found that teacher adaptability takes place within a condition of acceptability of change and encouraging students' participation. An example of an item generated for this dimension says: *Adaptive teaching is influenced by the teacher's personality*. Moreover, the final consequence of adaptive teaching was found to be an improvement, for example, *adaptive teaching improves understanding and appreciation*. Finally, teacher adaptability was found to be embodied within the context of the teacher's knowledge, skill, and openness to change. For instance, an item for the context dimension says *adaptive teaching is systematic and planned*. The list of indicators employed for generating the items is demonstrated in Appendix A.

The lead researcher did all these operationalizations and assignments, which were audit-checked by the second author. They discussed until they compromised on all these operationalizations and assignments. Finally, all these operationalizations and

assignments were converted into question items with 5-point scales by the authors (Appendix B).

Study Sample

The final developed survey was sent to a large number of researchers who had published articles on English teaching in higher education. Different well-known publishers (Elsevier, Taylor and Francis, Springer, ..) were searched for English Teaching and EFL keywords, and the authors' email addresses were retrieved from their contact information (available to the public). Finally, the survey was filled out with 195 teacher-researchers. 11 respondents were removed, as they had no experience of teaching in higher education. One of the respondents was recognized as an outlier and removed, as he responded to all questions with the same option. Two more participants were removed while checking the normality of data by the multivariate measure. The present study's sample comprised an international sample of 181 teacher-researchers from different nationalities. The nationality distribution of the final sample is presented in Table 1.

Table 1.

Nationality Distribution of Final Respondents

Nationality	Number of Respondents
Indonesia	22
Iran	14
Turkey	11
Poland	8
Japan	9
Thailand, China	14 (7 from each nationality)
Spain	6
Russia	5
Pakistan, Brazil, Chili	12 (4 from each nationality)
Argentina, Colombia, Ecuador, Oman, Serbia, Taiwan, the United States, Malaysia	24 (3 from each nationality)
Afghanistan, Algeria, Australia, Bangladesh, Cyprus, Ethiopia, India, Kazakhstan, Mexico, Morocco, Vietnam	22 (2 from each nationality)
Belgium, Cameroon, Croatia, England, Finland, France, Hungary, Iraq, Italy, Kenya, Kuwait, Mauritius, Nepal, Netherlands, New Zealand, Qatar, Romania, Rwanda, Saudi Arabia, Scotland, South Africa, Sudan, The Basque Country (Spain), Ukraine, the United Kingdom, Yemen	26 (1 from each nationality)
Afghanistan/India, Australia/Germany, UK/Japan, Indonesia /Australia, Iran/TRNC (Turkish Republic of Northern Cyprus), South Africa/UK, USA/UK, South Korea/USA.	8 (1 from each dual nationality)
	Sum = 181

160 respondents had more than 10 years of experience teaching English in higher education. Three of the respondents did not state their experience of teaching, but the mean experience of those 180 respondents who stated their experience was 19.95 (almost 20) years. Therefore, the sample comprised an experienced sample of international teachers in English higher education.

Data Analysis

The final extracted dimensions (factors) of teacher adaptability, extracted through the first qualitative phase of the study, were integrated into Clarke and Hollingsworth's (2002) IMTPG model as latent variables, and the reliability and construct validity of the newly adapted measure were examined through Structural Equation Modelling (SEM). As two different paths of *reflection* and *enactment* were depicted in the original IMTPG model, data analysis was performed on two IMTPG models, one adapting and validating the IMTPG for enactment, and another one for reflection. This will accelerate the path analysis. The integration of the final validated parameters will provide the final adapted and validated IMPTG for application in the English higher education context.

Data Screening and Sample Size

For conducting SEM, Stevens (2009) suggested a combination of univariate and multivariate measures to check the normality of the data. Therefore, first of all, the variables were found to be normally distributed. The univariate skewness and kurtosis were under 1 and 0.6 for all dimensions of *reflective practice*, *conditions*, *consequences*, and *context*, respectively (Table 2), meeting the normal distribution criteria of lower than 2 (Chou & Bentler, 1995) and 3 (Westfall & Henning 2013) for univariate skewness and kurtosis respectively. Then, the multivariate measure of Mahalanobis was calculated in AMOS, and two participants having the farthest distance from the centroid of the data were identified and removed from further data analysis. Therefore, both univariate and multivariate normality of data were adequate.

Table 2.

Descriptive Statistics on the Normality of the Data between Main Factors

Variable	Mean	SD	Skewness	Kurtosis
1- Reflective Practice	2.2489	1.30147	0.954	-0.600
2- Condition	2.5519	0.99728	0.639	-0.494
3- Consequence	2.3121	1.19223	0.871	-0.562
4- Context	2.3115	1.24629	0.885	-0.501

Reviewing the results of Monte Carlo simulation studies, Kyriazos (2018) reported on some rules of thumb for estimating the sample size in SEM studies. Anderson and Gerbing (1984) found 100 participants for studies with multivariate normal data as adequate. Jackson (2001) estimated this sample size to be 200-400. Moreover, the ratio of the number of participants (N) to the number of measured variables (survey items here) (p) is another rule. Tanaka (1987) and Bentler and Chou (1987) proposed 5 and 10 participants for each observed variable, respectively. Finally, Wolf et al. (2013) found a 30-460 sample size adequate for such studies.

Kyriazos (2018) continued that some other scholars believe that SEM models can be evaluated with samples as small as 100-150 (Ding et al., 1995) or 200 (Boomsma & Hoogland, 2001). Generally, Marsh et al. (1998) and Marsh and Hau (1999) believe that increasing the number of observed indicators per factor can neutralize the effect of small sample sizes. Therefore, a CFA model with 6–12 observed indicators per factor could be safely evaluated with N = 50 (Boomsma, 1985; Marsh & Hau, 1999)

In the present study, following Tanaka's (1987) rule and considering the fact that all four latent variables were specified with 6 or more than 6 indicators, 181 participants were found to be adequate. Moreover, the sample size was determined by Soper's (2020) software for calculating the minimum required sample size for conducting the SEM study. According to the condition of the present study (number of latent variables = 4; the number of observed variables =33, desired statistical power level = 0.8, and the anticipated effect size = 0.3), the minimum sample size to detect effect was calculated as 137. Hence, the present sample size (181) was more than enough to detect the effect. Following Cohen's (1988) rules of thumb for interpreting effect sizes in behavioral studies, 0.2, 0.5, and 0.8 were regarded as small, medium, and high effect sizes. But, different disciplines and their sub-disciplines have specific effect sizes calculated through metanalyses. No meta-analysis was found for *adaptive instruction*, but in the field of educational interventions, Hattie (2009) provided a list of effect sizes for different sub-disciplines related to this concept. Hattie (2009) reported an effect size of 0.23 for studies on *individualized and programmed instruction*, and *teacher personality attributes*; 0.21 for studies on *discovery-based practices*; 0.26 for *problem-based learning studies*; and 0.34 for *teaching creative thinking* and *collaborative learning studies*. Therefore, the average of 0.3 was selected as the effect size in the present study on adaptive instruction, which is similar to these sub-disciplines.

Table 3 presents descriptive statistics (mean, standard deviation) of the survey items. The SD for 5-scale items should be around 1. The results demonstrated that the SD of all

items met this criterion, indicating the discriminatory power of each item. The skewness and kurtosis of all items were between the acceptable ranges of -1 and 1 indicating, a normal distribution of all four main variables.

Table 3.

Descriptive Statistics for the normality of individual observable variables

item	Mean	SD	item	Mean	SD	item	Mean	SD
RF-Pr-1	2.14	1.442	Con-1	2.82	1.345	Consq-5	2.34	1.369
RF-Pr-2	2.25	1.505	Con-2	2.50	1.508	Consq-6	2.23	1.447
RF-Pr-3	2.30	1.422	Con-3	2.95	1.244	Consq-7	2.19	1.374
RF-Pr-4	2.23	1.395	Con-4	2.48	1.296	Consq-8	2.24	1.366
RF-Pr-5	2.23	1.376	Con-5	2.37	1.368	Consq-9	2.23	1.332
RF-Pr-6	2.05	1.542	Con-6	2.41	1.301	Contx-1	2.22	1.421
RF-Pr-7	2.22	1.481	Con-7	2.34	1.316	Contx-2	2.42	1.400
RF-Pr-8	2.38	1.393	Consq-1	2.84	1.127	Contx-3	2.67	1.311
RF-Pr-9	2.44	1.299	Consq-2	2.21	1.375	Contx-4	2.31	1.349
RF-Pr-10	2.18	1.470	Consq-3	2.27	1.411	Contx-5	2.10	1.521
RF-Pr-11	2.33	1.442	Consq-4	2.25	1.465	Contx-6	2.15	1.477

* RF-Pr (Reflective Practice), Con (Condition), Consq (Consequence), Contx (Context)

Results

Confirmatory Factor Analysis of the Measurement Model

Answering the first research question, the adapted IMTPG model's reliability and convergent validity were investigated by employing Confirmatory Factor Analysis (CFA). Employing IBM SPSS AMOS (version 26) (2019), different items of the survey were assigned to their related domains in IMTPG (the personal domain, the external domain, the domain of practice, and the domain of consequence), and a four-factor model was depicted.

AMOS 26 (2019) provided enough information about the adequacy of each item to the model and goodness-of-fit indices. Different parameters between the main factors were removed, and the resultant four-factor model underwent a confirmatory factor analysis to investigate the adequacy of individual items (their factor loadings) and the convergent validity of each main factor. The final confirmatory factor model is depicted in Figure 3.

The goodness of fitness criteria of χ^2, (Relative χ^2) χ^2/df, comparative fit index (CFI), Tucker and Lewis's index of fit (TLI), normal fit index (NFI), and root mean square error

of approximation (RMSEA) for this CFA model were reported in Table 4. According to Tabachnick and Fidell (2007), the relative $\chi^2$of ≤ 2 indicates an acceptable amount of fit. Fan et al. (1999) reported CFIs of > 0.90 as an acceptable fit. Hu and Bentlet (1995) found both TLIs and NFIs of > 0.90 acceptable. Finally, MacCallum et al. (1996) considered RMSEA values ≤ 0.05 as an excellent fit, while values up to 0.08 are acceptable. Based on these criteria, Relative $\chi^2$and NFI were not appropriately fit. Before embarking on SEM, all CFA model indices should fit with the above-mentioned criteria.

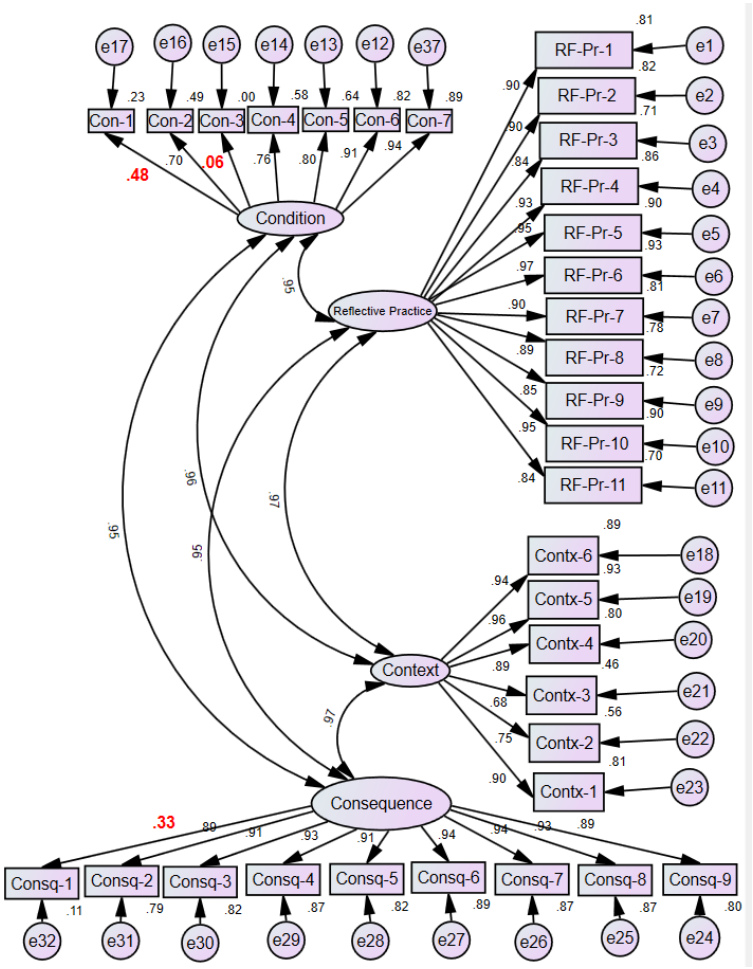

Figure 3. *Confirmatory Factor Analysis of the Initial Adapted IMPTG Model for English Teaching in Higher Education Context (Con, RF-Pr, Contx, Consq are items related to the condition, reflective practice, context and consequence dimensions, respectively)*

Table 4.

Goodness-of-Fit Criteria for the CFA Model of the Adapted IMTPG Model for English Teaching in Higher Education Context

	χ^2	*Df*	χ^2/df	CFI	TLI	NFI	RMSEA
Model performance	1166.126	489	2.385	0.920	0.913	0.870	0.088
Criterion for goodness of fit	-	-	≤ 2	> 0.90	> 0.90	> 0.90	≤ 0.08

Figure 3 indicated that three items of Con-1, Consq-1, and Con-3 had the least factor loading (0.48, 0.33, and 0.06, respectively). Factor loadings less than 0.3 (Con-3) should be removed from the model to improve the adequacy of the condition factor. A review of the items revealed that these two items ask respondents' views on conditions of adaptive teaching, imposing extra demands on teachers and creating uncertainty for teachers. As creating uncertainty imposes extra demands on a teacher, it was predicted that these two items are measuring the same thing; therefore, removing Con-3 would not damage the content validity of the whole model. Checking this assumption statistically and employing the pairwise critical ratio output of the AMOS 26 (2019), the critical difference ratio of Con-1 and Con-3 was calculated to be 4.441. As this ratio is more than 1.96, the difference between these two items is statistically significant, and they are measuring two distinct subdimension of the condition factor. Therefore, Con-3 was removed from the CFA model at the cost of decreasing the content validity of the original survey. After removing this item, all factor loadings were above 0.30 and were, therefore, adequate.

For estimating the validity of the measurements, after removing the inadequate item Con-3, the Average Variance Extracted (AVE) for each factor was estimated (0.81, 0.60, 0.74, and 0.76 for *Reflective practice*, *Condition*, *Context*, and *Consequences*, respectively). All AVEs were above the 0.50 threshold, indicating that the final four-factor model validates the correlation between four factors of adaptive teaching in English teaching in higher education. However, two indices of goodness-of-fit criteria were still under acceptable levels (χ^2/df= 2.354; NFI= 0.878).

To investigate other possible corrections, the modification indices of AMOS 26 (2019) yielded a list of parameter covariances (cross-loading items) and a list of covariance between errors of measurement. High cross-loadings can point to a misrepresentation of the default model, requiring major modifications. Within the present study, no cross-loading was observed, that is, no item was loaded to more than one factor, indicating the validity of the default model. But two items (Con-1 and Con-2) were shown

to be loaded on each other. However, their modification indices were not large enough to cause a change in the model (4.691 and 5.024).

Modification indices for covariances refer to covariances between the errors of measurement which were removed from the default model, based on our theoretical assumption of IMTPG model, but were significant enough to reduce the chi-square (more than the significant amount of 4, approximation of 3.84). Drawing back these covariances would improve the whole model.

Within the present study, covariances larger than 10 were modified by drawing covariances between errors of items Con-2 and Con-1 (e16 and e17: MI: 36.125); RF-Pr-4 and RF-Pr-5 (e4 and e5: MI: 26.675); RF-Pr-1 and RF-Pr-2 (e1 and e2: MI: 26.622); RF-Pr-7-1 and RF-Pr-8 (e7 and e8: MI: 24.123); Consq-7 and Consq-9 (e24 and e26: MI: 18.848); RF-Pr-6 and RF-Pr-6 (e6 and e9: MI: 12.622 and RF-Pr-8 and RF-Pr-11 (e8 and e11: MI: 11.809). As all these modified covariances were drawn within the realm of a single factor (not between the measurement errors of different factors), therefore, the modifications did not jeopardize our whole default model. These modifications were termed Corrections 1, 2, 3, 4, 5, 6, and 7, respectively, and they were applied on the default measurement model one by one, in the form of nested models (Correction 2 was applied on the model corrected with Correction 1, and so on).

As the default CFA model and its corrections were nested models, the statistical justification for corrections could be compared with chi-square difference tests. The calculations were done in AMOS. The results confirmed the plausibility of all corrections. There was a significant difference between the default CFA model and correction 1, χ^2 (1, N = 181) = 39.744, p = .000. Therefore, correction 1 was statistically justified. This significant statistical difference was also found between all other corrections: corrections 1 and 2 (χ^2 (1, N = 181) = 28.082, p = .000), corrections 2 and 3 (χ^2 (1, N = 181) = 28.383, p = .000), corrections 3 and 4 (χ^2 (1, N = 181) = 24.407, p = .000), corrections 4 and 5 (χ^2 (1, N = 181) = 19.901, p = .000), corrections 5 and 6 (χ^2 (1, N = 181) = 19.476, p = .000), and corrections 6 and 7 (χ^2 (1, N = 181) = 11.067, p = .001). This confirmed that each correction to default CFA model improved its previous model significantly. All in all, the final modified CFA model after applying all these seven corrections improved the default CFA model and all corrections were statistically justifiable (χ^2 (7, N = 181) = 171.06, p = .000). The improvement as a result of these five corrections is reported in Table 5.

Table 5.

Goodness-of-Fit Criteria after Modifying the CFA Model with All Corrections

	Correction 1	Correction 2	Correction 3	Correction 4	Correction 5	Correction 6	Correction 7
χ^2	1038.597	1010.515	982.132	957.725	937.824	918.348	907.281
Df	457	456	455	454	453	452	451
CMIN/df	2.273	2.216	2.159	2.110	2.070	2.032	2.012
CFI	0.930	0.934	0.937	0.940	0.942	0.944	0.945
TLI	0.924	0.928	0.931	0.934	0.936	0.939	0.940
NFI	0.883	0.886	0.889	0.892	0.894	0.896	0.898
RMSEA	0.084	0.082	0.080	0.079	0.077	0.076	0.075

Path Analysis of the Structural Model

To address the second question of the construct validity of the adapted model, after evaluating the fit of the CFA measurement model, the structural components of the model were returned for further evaluation. As the original IMTPG model included two different paths of reflection and enactment, to evaluate these two paths, two models were drawn, one including enactment parameters and the other including the reflection parameters.

Modification of enactment path

Figure 4 shows the adapted IMTPG model, including the enactment parameters. Modification indices of this model proposed drawing a parameter from the *context* factor to the *consequence* factor, predicting a 161.996 reduction in the chi-square. Moreover, a parameter was proposed to be drawn from *condition* to *consequence*, leading to a 158.773 reduction in the Chi-square. Before applying each correction, a chi-square difference test was required to check corrections' plausibility. Different corrections to the default enactment path incorporated only nested models. Chi-square difference tests were employed in AMOS to test corrections in nested models. According to these outputs, the default model (nested in correction 8) was statistically different from correction 8 (χ^2 (1, N = 181) = 423.476, p = .000). This confirmed that correction 8 was an improvement to the default enactment model, and was justifiable. Comparing corrections 8 and 9, (correction 8 is nested in correction 9) revealed no statistical difference (χ^2 (1, N = 181) = 2.515, p = .113). But as the number of parameters in correction 8 is less than that in correction 9, correction 9 was not an improvement. Moreover, the goodness-of-fit criteria reported that correction 9 did not improve the model. Therefore, correction 9 was not applied within the enactment parameters model.

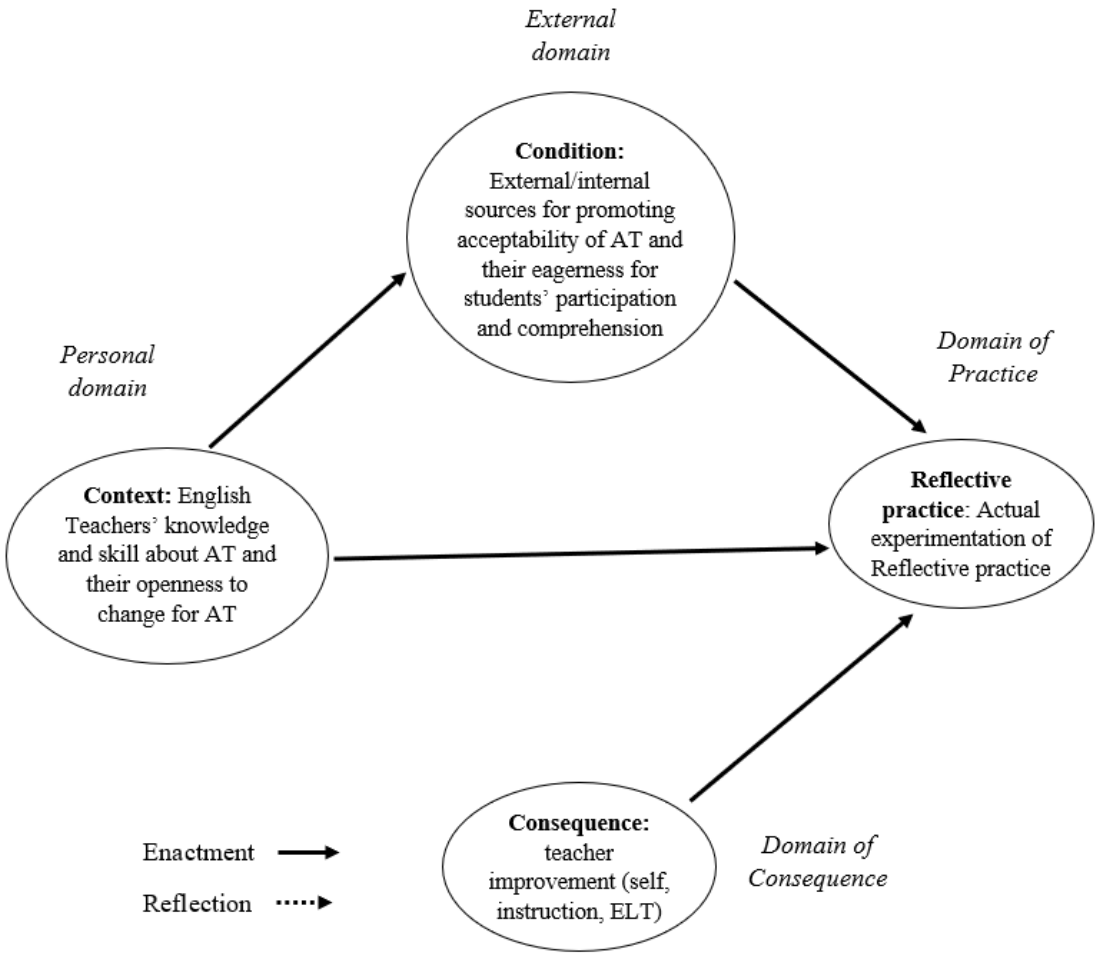

Figure 4. *Original IMTPG Model for Enactment Path*

After applying the first correction, it was found that the factor loading of the parameter from *consequence* to *reflective practice* was 0.10 (Lower than 0.30). The difference between this parameter and zero was insignificant (P = 0.518). Then, removing this parameter could be the next correction (correction 10). On the other hand, the estimates of regression weights for this model proposed that the parameter from *condition* to *reflective practice* is not statistically significant (P= 0.135). Therefore, another correction on this model can be the removal of this parameter (Correction 11). As correction 9 was not applied, the statistical justifiability of correction 10 should be compared with that of correction 8. Correction 10 was nested in correction 8. After applying correction 10, the chi-square was not statistically significant (χ^2 (1, N = 181) =

0.405, p = .524). But as the number of parameters in correction 10 was less than that in correction 8, correction 10 was an improvement to the model. Finally, correction 11 (nested in correction 10) was not statistically different from correction 10 (χ^2 (1, N = 181) = 2.001, p = .157), but again, as correction 11 was simpler and had fewer parameters, correction 11 was an improvement compared with corrections 10. The report of all goodness-of-fit criteria for the correction of enactment parameters is presented in Table 6. While CMIN/df was slightly increased after correction 11, the estimates of regression weights showed that after applying correction 11 (not as much as exceeding the CMIN/df of the first correction), all parameters of the enactment path were statistically significant. The final model of the enactment path according to the present study data is presented in Figure 5.

Table 6.
Goodness-of-Fit Criteria for Corrections on Enactment Parameters

	Correction 8	Correction 9 (not applied)	Correction 10	Correction 11
χ^2	909.796	907.281	910.201	912.202
Df	452	451	453	454
CMIN/df	2.013	2.012	2.009	2.009
CFI	0.945	0.945	0.945	0.945
TLI	0.940	0.940	0.940	0.940
NFI	0.897	0.898	0.897	0.897
RMSEA	0.075	0.075	0.075	0.075

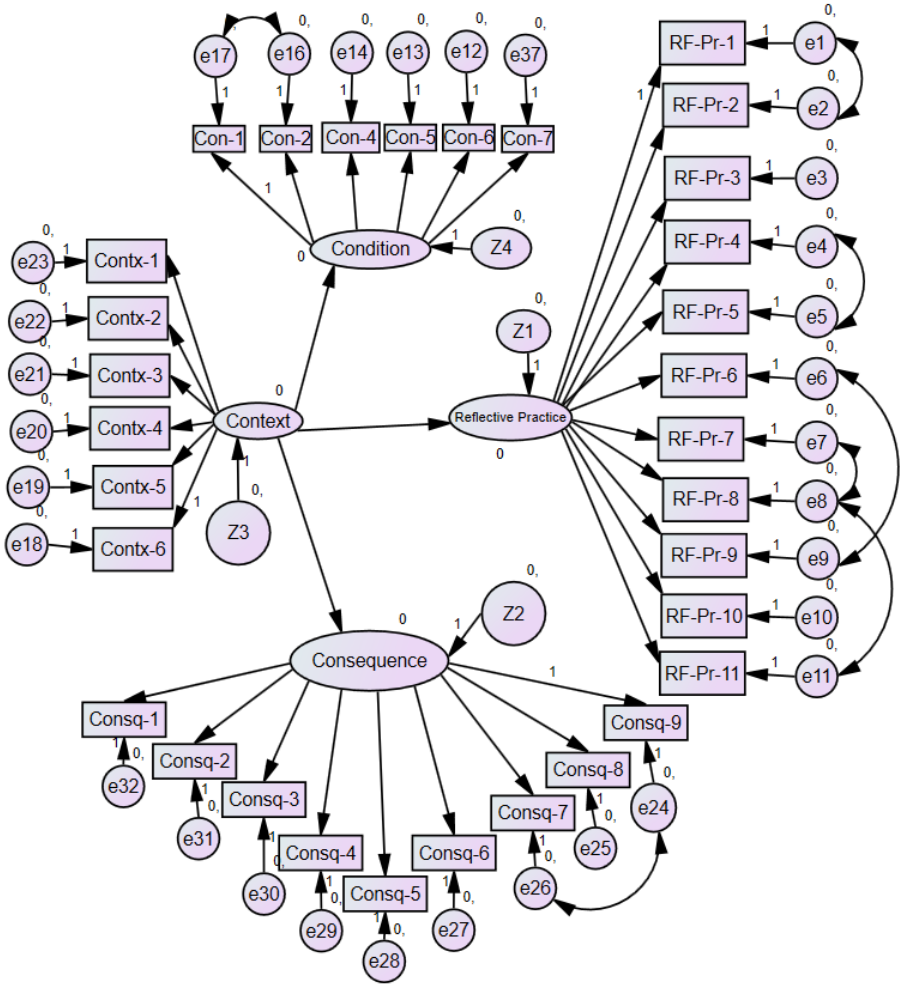

Figure 5. *Final Modified Enactment Parameters in Adapted IMTPG Model for Teaching English in Higher Education (Con, RF-Pr, Contx, Consq are items related to the condition, reflective practice, context and consequence dimensions, respectively*).

Modification of reflection path

The default model of the reflection path (Figure 6) indicated that the factor loading of *reflective practice* to *consequence* (-0.16) and factor loading of *consequence* to *context* (-0.49) were very low. Estimates of regression parameters of the default model of reflection reported that these parameters were not significantly different from zero (0.049 and 0.128, respectively). Therefore, the removal of these two parameters can be the target of model modification (corrections 12 and 13).

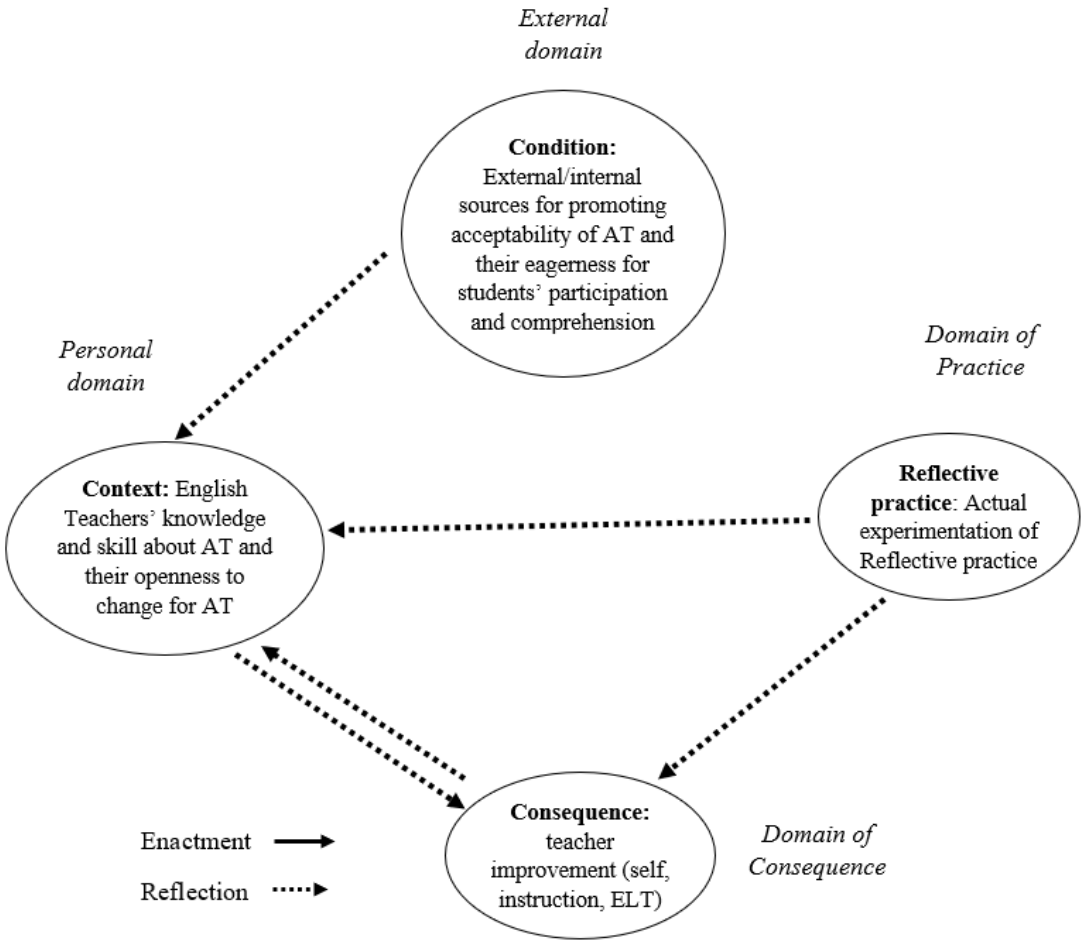

Figure 6. *Original IMTPG Model for Reflection Model.*

On the other hand, modification indices of the reflection model proposed drawing a parameter from the *reflective practice* factor to the *condition*, predicting a 150.720 reduction in chi-square and drawing a parameter from the *condition* to the *reflective practice* with another 150.720 reduction in chi-square. These modifications will comprise corrections 14 and 15, respectively.

The results of applying these corrections one by one are presented in Table 7. Correction 15 did not change any goodness-of-fit fit indices (Table 7); therefore, it was not applied within the reflection model.

Table 7.

Goodness-of-Fit Criteria for Corrections on Reflection Model

	Correction 12	Correction 13 (not applied)	Correction 14	Correction 15 (not applied)
χ^2	1241.920	1244.639	910.201	910.201
Df	453	454	453	453
CMIN/df	2.742	2.741	2.009	2.009
CFI	0.906	0.905	0.945	0.945
TLI	0.897	0.897	0.940	0.940
NFI	0.860	0.859	0.897	0.897
RMSEA	0.098	0.098	0.075	0.075

Before applying each correction, the plausibility of corrections was tested statistically. For reflection models, nested and un-nested models were incorporated. Chi-square tests were applied to check the plausibility of corrections in nested models, while for un-nested ones, Akaike Information Criterion (AIC) values were compared. Both were calculated within AMOS. According to the outputs, correction 12 (nested in the default reflection model) was not statistically different from the default reflection model (χ^2 (1, N = 181) = .400, p = .527), but as the number of parameters in correction 12 was less than the default model, correction 12 was an improvement. Corrections 12 and 13 were two un-nested models. Then their AIC values were compared. The AIC values showed that correction 13 did not improve the model, as it increased the AIC values by 2.229 units. Then, comparing corrections 12 and 13, correction 13 was not an improvement. Therefore, correction 12 should be compared with correction 14. Again, these two models were un-nested. AIC values confirmed that correction 14 was an improvement over correction 12, as it decreased the AIC values by 330.667 AIC units. The final modified reflection model is presented in Figure 7.

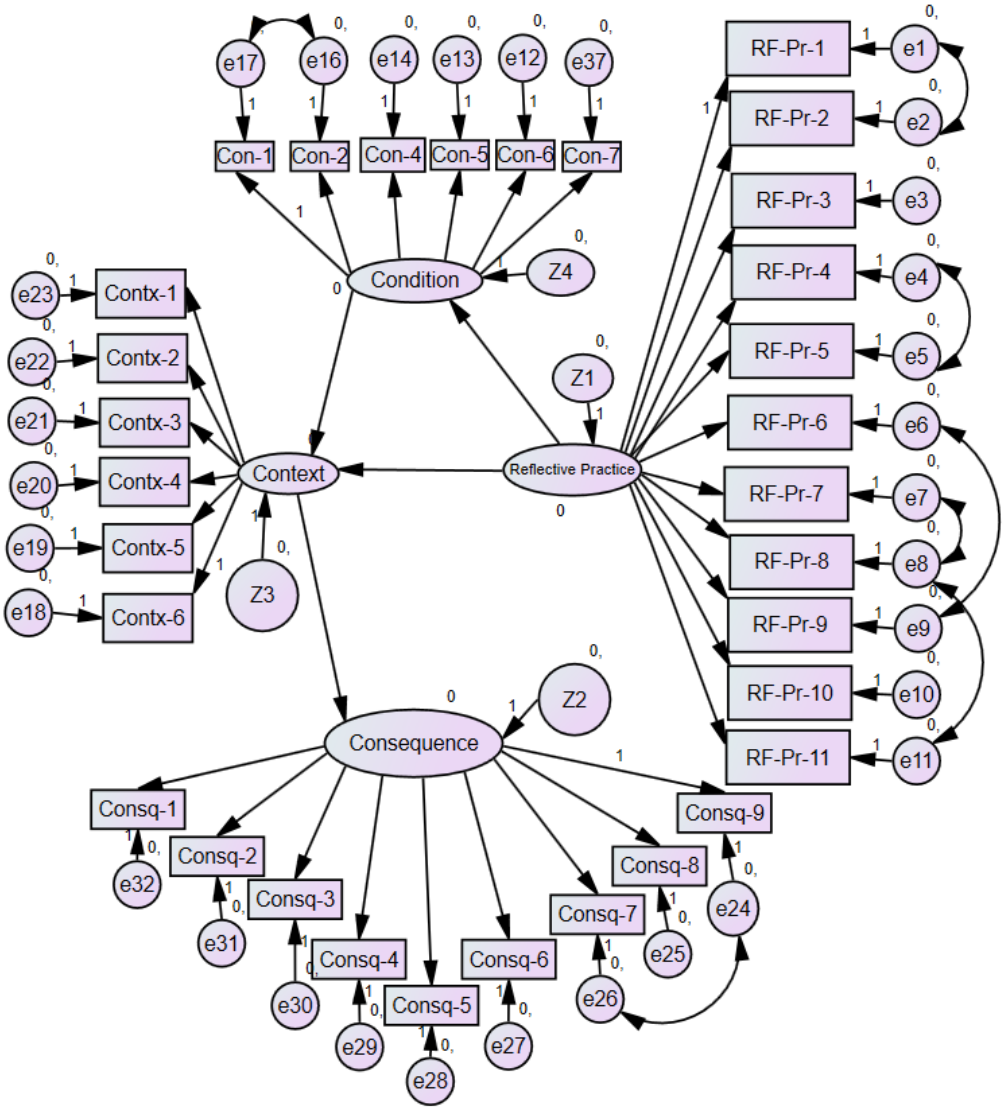

Figure 7. *Final Modified Reflection Parameters in Adapted IMTPG Model for Teaching English in Higher Education (Con, RF-Pr, Contx, Consq are items related to condition, reflective practice, context and consequence dimensions, respectively).*

Now that both enactment and reflection models have met the goodness-of-fit criteria, incorporating validated parameters, the final adapted IMTPG for teaching English in higher education is proposed in Figure 8.

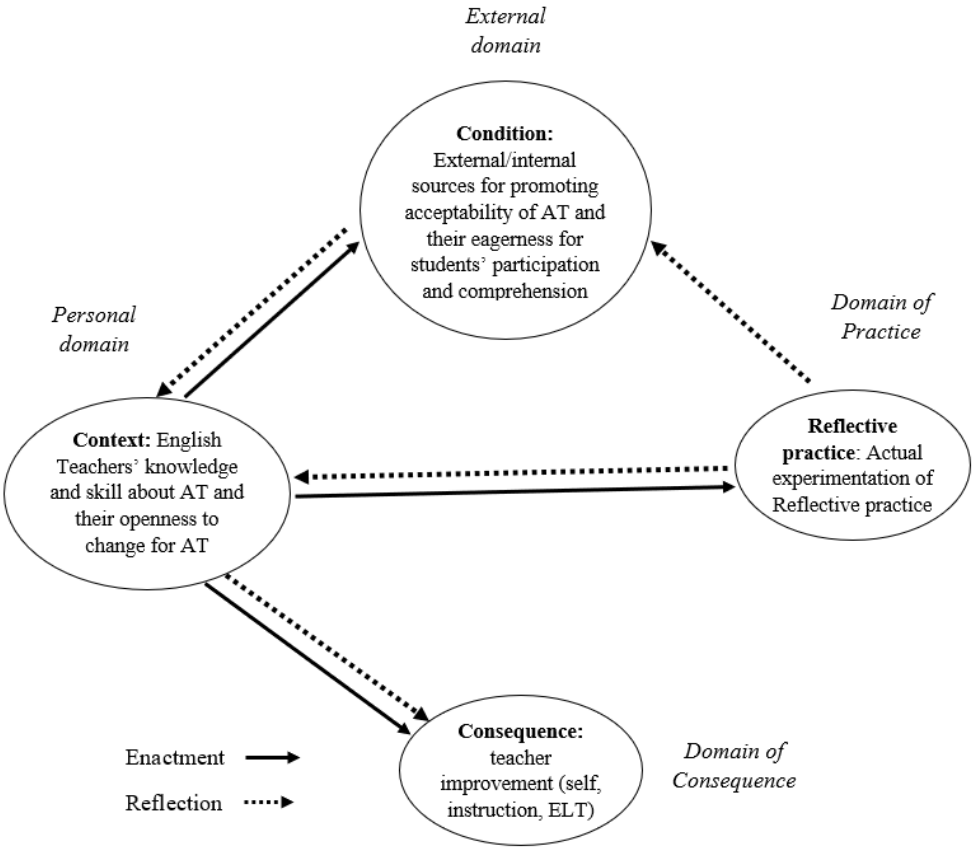

Figure 8. *Final AT-IMTPG for Teaching English in Higher Education.*

The final adapted IMTPG for measuring adaptive teaching in English higher education proposed in this study revealed different reflection and enactment paths compared with the original one. Applying Clarke and Hollingsworth's (2002) operationalization of different reflection and enactment models within the original IMTPG, it can be inferred that within English teaching higher education, adapted IMPTG for adaptive teaching (AT-IMTPG) includes three reflection and four enactment parameters defined as follows:

Reflective parameter from condition to context: Providing external sources of information for promoting teachers' acceptability of change and their eagerness for student's participation in the instruction and their comprehension changes their knowledge of adaptive teaching (AT), AT skills, and their openness to change about employing AT. (This parameter will be realized only if their beliefs are embodied into adaptive reflective practices).

Reflective parameter from context to consequence: Changing teachers' knowledge of AT, AT skills, and their openness to change about employing AT makes them think that their improvement (self, instruction, and the ELT context as a whole) to an adaptive teacher is a valued outcome.

Reflective parameter from reflective practice to condition: Teachers' experimentation of reflective practices (evaluation, reflection, planning, and teacher enactments) encourages them to seek internal stimulus for their acceptability of change and their eagerness for students' participation and comprehension.

Reflective parameter from reflective practice to context: Teachers' experimentation of reflective practices (evaluation, reflection, planning, and teacher enactments) influences their knowledge of AT, AT skills, and their openness to change about AT.

Enactment parameter from context to condition: Teacher's acceptability of change and their eagerness for students' participation and comprehension is enacted through improving their beliefs about the necessity of AT knowledge, AT skills, and their openness to change about AT.

Enactment parameter from context to reflective practice: Teacher's professional experimentation of the cyclical process of reflective practices (evaluation, reflection, planning, and teacher enactments) is enacted through improving their beliefs about the necessity of AT knowledge, AT skill, and their openness to change about AT.

Enactment parameter from context to consequence: Noticing teachers about the concrete consequences of adaptive teaching for themselves, their instruction, and the whole ELT context is enacted, improving their beliefs about the necessity of AT knowledge, AT skill, and their openness to change about AT.

Discussion

As predicted by Clarke and Hollingsworth (2002), IMTPG can depict different pathways within different contexts than the original IMTPG. Hence, the pathways within the AT-IMTPG are justifiable because the original IMTPG was proposed and validated for primary and high school, not higher education, and in the context of mathematics and science education, not English teaching. The AT-IMPTG model violated the original IMTPG pathways in two ways. First, a reflective parameter was proposed between the reflective practice and condition domains. This violation of the original pathway may refer to conceptualizing the sources and stimulus as external. This parameter can imply that, within AP-IMTPG, the stimulus is internal rather than external. It may be due to

employing well-experienced teachers of English in higher education for adapting and validating AT-IMTPG. In other words, after experimenting with some reflective practice techniques, experienced teachers will seek internal sources for encouraging or convincing themselves to accept adaptive teaching as a change in their instruction. This conclusion is in line with Clarke and Hollingsworth's (2002) professional growth perspective when proposing the original IMTPG. This perspective considers teachers and students as learners working together in a learning community.

Another violation of the original IMTPG resides in drawing two reflective and enactment pathways from one domain (context) to another (consequence). For analyzing the process of teacher change process through the original IMTPG, Clarke and Hollingsworth (2002) distinguished the momentary, superficial change in behavior from the complex lasting changes, termed as *change sequence* and *growth network* respectively. They defined *change sequence* as two or more domains connecting through reflective or enactive links when the occurrence of the change in each domain and their causal connection are empirically confirmed. When these *change sequences* grow further, the more lasting changes, the *growth network*, occur. But these two operationalizations presuppose the tracking of the change over time. The time limitation of some studies made Justi and Van Driel (2006) employ another distinctive criterion. Accordingly, the occurrence of one or two links between different domains indicates a superficial change in the knowledge, a *change sequence*, while more than two links between different domains depict a more complex change in their knowledge, represented as a *growth network*. Hence, two reflection and enactment parameters from one single domain to another can represent a *change sequence* or a *growth network*.

Moreover, the final AP-IMPTPG model does not accord with other teacher adaptability models (Gallagher et al., 2020; Parsons et al., 2018), depicting a cyclical process for teacher adaptability. In their models, AT's consequence was considered a stimulus for further adaptation. However, this cyclical process was not confirmed within the AT-IMTPG model. No parameter was found between these two domains. It may be due to the limited sample size or to specializing IMTPG in English higher education.

Conclusion

Different conceptualizations of adaptive teaching were unified in the previous phase of this study for the context of teaching the English language within higher education. The IMTPG model was adapted and validated in the present study for this specific context. Structural Equation Modelling (SEM) was employed for validating two different

paths of enactment and reflection in IMTPG, and the final AT-IMTPG model (Figure 8) was proposed.

Theoretically speaking, AT-IMTPG can improve the implementation of educational innovations. Many curricula around the world witness the failure of many teachers in implementing innovations- new methods and even techniques- proposed by the authorities. Emphasizing the importance of innovation management, David (2013) attributes the failures of these educational reforms to the lack of understanding of the principles and practices of managing and implementing educational change. Educational innovation cannot be sustained unless *teacher change* is achieved. Hence, fostering adaptive teaching through AP-IMTPG can indirectly help innovation implementation at the macro level.

Practically speaking, all three applications envisaged by the authors of the original IMTPG (analytical, predictive, and interrogatory applications) can be proposed for AT-IMTPG in English teaching in higher education. As an analytical tool, AT-IMTPG can be applied as a measure to evaluate how adaptive English teachers are before and after TPD programs for fostering adaptive teaching. As a predictive tool, it can be employed for proposing some techniques to foster adaptive teaching in TPD programs. Different approaches are already proposed in the literature for fostering teacher adaptive competency in TPD programs, including *supervision* (Snow-Gerono, 2008), *reciprocal peer coaching* (Zwart et al., 2008), or *content-focused coaching* (West & Staub, 2003). For instance, in case of applying content-focused coaching for fostering teacher adaptability using AT-IMTPG, the participants will be given some vignettes (descriptions of classroom scenarios). These vignettes will be developed based on different parameters of the final AT-IMTPG. Then, the instructor takes the role of the coach and simulates the classroom context and will discuss what they, as adaptive teachers, would do in such classroom situations. These techniques can be incorporated into all English teacher training programs for higher education, improving the efficiency of TDPs. Finally, as an interrogatory tool, AT-IMTPG can help answer some theoretical or practical questions, such as what can change teacher knowledge, beliefs, or attitudes. Moreover, AT-IMTPG is helpful for teaching English for other disciplines than English. All university courses for teaching technical English to students of other disciplines can benefit if their teachers are made adaptive using this measure.

Contrary to the studies employing an Iranian sample of participants for proposing a model for teacher professional development in the Iranian EFL context (Haghi et al., 2023; Soodmand Afshar & Ghasemi, 2018; Yasaei et al., 2022), this study utilized an

international sample. Collecting more data from an international population of English teachers in a higher education context was out of the time constraint of the present study, but the international nature of the collected sample promoted the generalizability of the final adapted model (AT-IMTPG) to the target international population. Larger sample sizes are suggested to be employed for validating AT-IMTPG in future studies. Moreover, AT-IMTPG is highly contextualized for application in English teaching higher education. This contextualization enhances its application for resolving the immediate problems of English teaching higher education and provides several specific implications and applications but limits its application for other contexts. Further adaptation and validation studies are required for contexts other than English teaching in higher education.

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Appendices

Appendix A: Indicators of Adaptive Teaching

Teacher Adaptive Processes:
RF-Pr-1- An adaptive teacher evaluates whether appropriate instructional practices are being employed. RF-Pr-2- An adaptive teacher evaluates their own assumptions, values and beliefs about language teaching. RF-Pr-3- An adaptive teacher prepares lesson plans. RF-Pr-4- An adaptive teacher explains what happened. RF-Pr-5- An adaptive teacher explains why happened. RF-Pr-6- An adaptive teacher finds possible solutions. RF-Pr-7- An adaptive teacher differentiates the instruction. RF-Pr-8- An adaptive teacher individualizes the instruction. RF-Pr-9- An adaptive teacher discusses students for finding critical moments requiring adaptation. RF-Pr-10- An adaptive teacher modifies teaching instructions. RF-Pr-11- An adaptive teacher modifies their self
Teacher Adaptability Conditions
Con-1- Adaptive teaching imposes extra demands on teachers Con-2- Adaptive teaching challenges teachers' routinized ways of teaching Con-3- Adaptive teaching creates uncertainty for teachers Con-4- Adaptive teaching is influenced by teacher's own language learning experiences Con-5- Adaptive teaching is influenced by teacher's personality Con-6- Adaptive teaching is initiated for encouraging students' participation Con-7- Adaptive teaching is initiated for ensuring students' comprehension
Teacher Adaptability Consequences
Consq-1- Adaptive teaching responds the demands of institutions Consq-2- Adaptive teaching promotes teacher professional development Consq-3- Adaptive teaching unveils new understanding of teaching Consq-4- Adaptive teaching improves instruction Consq-5- Adaptive teaching renews instruction Consq-6- Adaptive teaching enhances students' learning Consq-7- Adaptive teaching improves teachers' self Consq-8- Adaptive teaching improves understanding and appreciation Consq-9- Adaptive teaching renews teachers themselves
Teacher Adaptability Context
Contx-1- Adaptive teaching is continuous Contx-2- Adaptive teaching is cyclical Contx-3- Adaptive teaching is systematic and planned Contx-4- Adaptive teacher is knowledgeable Contx-5- Adaptive teacher is open-minded Contx-6- Adaptive teacher is professionally skillful

Appendix B: The online Survey for collecting data
Years of Experience of English Language Teaching:
Country:….
Which educational level have you been teaching English (more than one choice is possible)?

Elementary
Secondary
Higher education/University
Private Schools (For teaching English to children)
Private institutions (For teaching English to adults)

Thanks for accepting to collaborate in the present study. The purpose of the present study is development and validation of an instrument for measuring "English Language Teachers' Adaptability in higher education". Different dimensions of the construct of teacher adaptability are specified and we will appreciate it if you can comment on different aspects of this construct based on your experience and knowledge. The survey consists of three different parts

Part 1: What does an Adaptive Teacher do?
Strongly agree somehow agree agree somehow disagree strongly disagree

1- An adaptive teacher evaluates whether appropriate instructional practices are being employed.
2- An adaptive teacher evaluates their own assumptions, values and beliefs about language teaching.
3- An adaptive teacher prepares lesson plans.
4- An adaptive teacher explains what happened.
5- An adaptive teacher explains why happened.
6- An adaptive teacher finds possible solutions.
7- An adaptive teacher differentiates the instruction.
8- An adaptive teacher individualizes the instruction.
9- An adaptive teacher discusses students for finding critical moments requiring adaptation.
10- An adaptive teacher modifies teaching instructions.
11- An adaptive teacher modifies their self.

Part 2: What does Adaptive teaching mean to you?
Strongly agree somehow agree agree somehow disagree strongly disagree

12 - Adaptive teaching imposes extra demands on teachers.
13 - Adaptive teaching challenges teachers' routinized ways of teaching.
14 - Adaptive teaching creates uncertainty for teachers.
15 - Adaptive teaching is influenced by teacher's own language learning experiences.
16 - Adaptive teaching is influenced by teacher's personality.
17 - Adaptive teaching is initiated for encouraging students' participation.
18 - Adaptive teaching is initiated for ensuring students' comprehension.
19 - Adaptive teaching responds the demands of institutions.
20 - Adaptive teaching promotes teacher professional development.

21 - Adaptive teaching unveils new understanding of teaching.
22 - Adaptive teaching improves instruction.
23 - Adaptive teaching renews instruction.
24 - Adaptive teaching enhances students' learning.
25 - Adaptive teaching improves teachers' self.
26- Adaptive teaching improves understanding and appreciation.
27 - Adaptive teaching renews teachers themselves.
28 - Adaptive teaching is continuous.
29 - Adaptive teaching is cyclical.
30 - Adaptive teaching is systematic and planned.
31 - Adaptive teacher is knowledgeable.
32 - Adaptive teacher is open-minded.
33 - Adaptive teacher is professionally skillful.