

# If One Goes Up the Other Must Come Down: Examining Gender Differences and Understanding of Models of Learning Style: A Non-Western Perspective

Adebowale Akande<sup>1</sup> · Modupe Adewuyi<sup>2,3</sup> · Titilola Akande<sup>4,5</sup> · Bolanle Adetoun<sup>6</sup>

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**Abstract** Models of learning style or approaches to learning have been operationalized in the Learning Process Questionnaire (LPQ). Guided by an assumed framework, the authors examine the construct validity of the LPQ in Botswana and investigate the similarities and differences in the process of learning in a non-Western context. Six structural equation modeling are used to test the association between cross-cultural variability and learning. Responses to this instrument are shown to have good internal consistency reliability, and support is provided for its construct validity in terms of its factorial structure. Results further reveal support for dimensions of deep and surface strategies, despite the differences in learning conceptualizations. The strategies utilized by students in the Western educational context are similar to those used by their African counterparts. Taken together, the interaction of gender and culture, makes us propose a relationship between culture, learning and life adaptations, thus extending the concept of learning style to account for the influence of culture. Tentatively, conceptual issues in learning process and suggestions for further research are presented.

**Keywords** Learning · Non-Western · LPQ - surface and deep strategies · Botswana/ Africa · Gender · Well-being and Quality of Life

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✉ Adebowale Akande  
deboakande@yahoo.com

<sup>1</sup> IRC, PO Box 2327, Pretoria 0001, South Africa

<sup>2</sup> Rollins School of Public Health, Emory University, Atlanta, Georgia

<sup>3</sup> Mercer University, Atlanta, GA, USA

<sup>4</sup> Dublin University, Dublin, Ireland

<sup>5</sup> Malmö University, Malmö, Sweden

<sup>6</sup> ECOWAS, Abuja, Nigeria

## 1 Introduction

“(South) African Universities face two major challenges ..... At UWC, selection policy is designed to broaden access to university. However, we recognise that admitting students disadvantaged by apartheid education is in itself of no virtue, unless we create circumstances conducive to success for a significant proportion of them. This highlights the need for comprehensive teaching and learning innovations and methods of academic development” (Jakes Gerwel 1993, Late Vice Chancellor, UWC and former DG to President Mandela).

Over the past century or so, researchers and indeed lay persons alike, adapt to learn and perform skillful tasks. Learning is a characteristic observed by researchers of human behavior throughout recorded history, from Aristotle (in politics and governance, C. 320 BC) to Skinner (in Operant Conditioning, 1954), Piaget (in epistemological learning 1964) Aronson (in the Social Animal, 1980), and recently, Watkins and Akande (in emic/etic Learning 1994). In learning context, like any other social behavioural contexts, individuals in need of acquiring skills do so with the aim of adding more personal values, which will eventually help him or her do well in life. One issue of increasing importance is that, learning is a means to an ‘ultimate’ end—‘subjective well-being and quality of life’.

However, learning like other human behavior is no stranger to controversy, especially in the issue of gender differences and approaches to learning (Bergami and Bagozzi 2000; Feingold 1992; Huntley and Davis 1983; Kirp 2013; Pat-El et al. 2013; Skinner 1954; Spitzer and Aronson 2015; Vandavelde et al. 2013; Veeman 2011). In his extensive review of data, Ellis (1894) sparked the controversy that suggested males varied more than females in both physical and mental characteristics. Ellis supported his findings with a biological explanation. However, Ellis’s (1894) methodology was criticized by many psychologists which included (Lieberman 2013; Pearson 1897; Ravitch 2014; Yeager 2014). In recent era, researchers (Akande 1997; Arens and Moller 2016; Baas et al., 2015; Buss and Craik 1983; Ceci and Williams 2010; Clark 2012; Choy et al. 2012; Dismore and Alexander 2012; Gerwel 1994; Gill 2009; Watkins and Akande 1992) have found most of these theories to be inadequate.

In Cronbach’s (1977) and Watkins’ (1994) words, in order to demonstrate that the construct being measured in one culture is embedded in a similar network of constructs present in the same way in a comparable culture. There is need to test both between-construct and within-construct portion of the normological setting. The underlying rationale here is, once we can establish that the construct has the same meaning in similar differing cultures, then we can boldly affirm that the measures utilized in the process are applicable trans-culturally and cross-nationally. Conceptions of learning can be said to be context dependent, but at the same time, while consistent across contexts, there may still be variations in other contexts. In addition, this may be due to differences in curricula, assessment system, cultural and socio-economic backgrounds, level of schooling, area of syllabi, and environmental variable (e.g. home, peer, mass-media and school). Hence, learning is grouped in terms of input (presage), approach (process) and output (product) stages. A number of models such as social, cognitive and affective factors encompass the complex process of learning, particularly in the school setting.

Thus, the conceptualization of 3P model of learning by Biggs (1987). Student learning from a phenomenographic perspective have identified two contrasting conceptions of learning: surface and deep. But we should note the presence of what can be considered to

be a third approach, the strategic approach; 'where students aiming towards top achievement, using whichever of the deep or surface approach' could be applied (Marton and Saljo 1976). A surface conception of learning means that 'content should be memorized by paying attention to specific details, so that it could be reproduced at a later stage. Whereas, in a deep conception of learning, the aim was to construct meaning' (p. 88). The covert focus for self-enhancement in various approaches to learning is not only for achievement but general well-being (Covington 1992; Kostons et al. 2012).

Nowadays, learning has been emphasized over teaching at all levels of schooling. A diverse of active learning strategies have been recommended in order to attain optimal learning in education. It is also believed that an individual is not the only active agent in a companionable education. Other factors contributing to individual's success include socio-cultural, physical, psychological, economical and environmental, (school, society and home) influences. All these contribute to an individual's appropriate learning style preferences that lead to performance and academic achievement.

Many authors, most notably, Leinhardt et al. (1990) posited, that how a teacher teaches is a consequence of the structure and idiosyncrasies of the domain as well as the teacher's knowledge of how student understanding develops in the domain. Nevertheless, informed pedagogy also draws on knowledge that extends beyond knowledge of the task and knowledge of how students learn and their perceptions of the learning environment (Arens and Moller 2016). It must be 'sensitive to decisions about sequencing, explanations, examples, and representations, (Leinhardt et al. 1990).

In today's changing world with its endless supply of information, the role of education is to widen a person's horizon and worldview by providing the individual with experiences that allow him or her to think creatively with what they know. Children, it is argued, possess intuitive ideas about functional relationships that have been developed through global perceptual observations of the physical phenomena that surround them every day (e.g., the change of temperature over time). Learning is said to be a lifelong process in which students (and other agents or partners in general) undergo a change in their way of thinking and acting. In this way, students develop professional knowledge of the subject matter, attitudes and skills and utilize them appropriately for the necessary tasks and other contexts encountered in real life. Consequently, students learn to reflect on their learning approaches, so as to 'reason out what works and what does not, and establish the causes for successes or failures.' Features of this intuitive knowledge base include notions about dependence, causality, and variation. Children notice that certain things "go together" in the real world and expect that things will change over time and that there will be some pattern to that change (Leinhardt et al. 1990).

## 1.1 Alternative Learning Strategies

In line with this, the Learning Process Questionnaire (LPQ) was then developed to assess the constructs salient to cross-cultural learning, (Biggs 1987). LPQ is an instrument developed for use with youth populations. The LPQ encompasses many instruments developed from research into students' approaches to learning. The theory underpinning development of the LPQ is that, youth learning involves, a composite of motives and strategy dimensions termed surface, deep, achieving and deep achieving approaches. These three approaches are categorized to show the differences in the way children approach their learning, the uniqueness of each individual, their talent, aspiration, sense of purpose and interest throughout the course of life.

Classic psychological research have long established the salience of learning, as a process of equipping the person with unique values, virtues, and necessary skills. Learning approaches are then said to be the motives and strategies students bring to the school setting that are amenable to change.

## 1.2 Description of LPQ

The LPQ is a 36 item, self-report inventory grouped into six motive/strategy scales, plus 7 items tapping locus of control, that measures the extent to which students endorse different approaches to learning. A detailed explanation of motives and strategies for each of the LPQ approaches is documented (see the “[Appendix](#)”).

The bulk of all the theories and data of contemporary education and social science come from Western populations (e.g., Europeans, North Americans, Australians, etc.). Whereas over 70 % of human beings live in non-Western cultures, like Africa, Asia, and Latin America (Triandis 1995). If we are to have a social science that will become a universal discipline, it will need to blend both theories and data from the Western and non-Western world. Hence, it is not strange that most of the evidence in support of LPQ originated from the West. To an exception is the work of Watkins and Akande (1994).

With the purpose, to offer a different approach to the conceptual analysis of a test that tentatively points towards monitoring individual’s well-being, the present study utilized a sample of Botswana youth (phase II) as well as like-aged sample of Nigeria, Hong Kong and Canadian children (Wong et al. 1996) in order to increase the measurement variance on LPQ indicators, in accord with sound analytic guidelines. Wong et al. (1996) study attempted to determine the within-construct validity of the surface-deep-achieving model and of the Learning Process Questionnaire with different cultures, it is evident that the results obtained were rather tentative and require further replication or cross-validation. The present paper reported the findings of such cross-validation investigations. Research directed toward generating these parameter is essential, if the potential of the test for detecting the six a priori models is to be realized. The present study, is trying to provide further evidence on this issue, and on the validity of the items, in accord with the rationale of Biggs (1993), Boyle (1986), Hui and Triandis (1985) and Watkins and Akande (1994).

## 2 Methods

The data presented in this article were collected as part of a larger African investigation in many psychological domains.

### 2.1 Participants

The subject pool for this study was made up of 232 youth (109 boys and 123 girls), in pre-matriculation class. Piloting of the questionnaire took place in two contrasting schools which were broadly similar, in terms of the ability of the pupils, to the majority of the schools participating in the survey across nations. We obtained a median reliability index (Cronbach alpha) of 0.62. Subject spent approximately 25 min completing the self-report questionnaire regarding their alternate learning strategies and tentative monitoring their well-being. All subjects were black and were not paid for their participation in the study.

## 2.2 Procedure

Each participant received a sheet with standard instructions in intact classes (in large groupings) during normal class period using the English version. The research project had previously been explained to the schools. Participants provided assent prior to the survey administration and were reminded of confidentiality and of their freedom to discontinue participation at any time. To ensure confidentiality, and that the responses of each participant were independent and private, students' names were removed from surveys and students were seated apart from one another in a classroom setting monitored by survey administrators. Our collaboration with administrators and teachers produced a 97 % compliance. More than half (66 %) of the participants reported their father's and/or mother's level of education as some high school or better. Common jobs named for mothers were teacher, trader and office clerk, and common jobs for fathers were miner/construction worker, mechanic, teacher, and manager. The participants were not asked to indicate their family income.

## 2.3 Analysis of Responses

We tested six structural equation models using the causal modeling approach, provided by the LISREL VI computer program to evaluate the models. Furthermore, structural modelling provides for immediate adjustments to the model to fine tune concepts and their relations. Factor analysis was utilised to calculate variable intercorrelations and scale reliabilities and to conduct item analyses and confirmatory factor-analyses (CFAs), using a procedure suggested by Watkins and Akande (1994) and Wong et al. (1996).

## 3 Results

Under the six conditions, the LPQ subscales were very similar when comparing the results of Botswana (Phase II) with other nations. This would enable each item to measure a different aspect of a given dimension providing broader, less redundant and more efficient measurement. As Biggs (1987, 1988) reported, alphas that ranged from 0.35 to 0.52 for the subscale of surface strategy and alphas that ranged from 0.51 to 0.55. In the present study, the LPQ 6 subscales  $\alpha$  coefficients of 0.36–0.54, rote learning is the most common strategy used, such students just take up any techniques they think easiest (Biggs 1993). Just as in previous studies (e.g., Watkins and Akande 1994; Watson and Russell 2015; Wong et al. 1996) the results also showed a fairly low internal consistency of the subscales, this might be due to the fact that there were no definite surface strategy.

For the measurement model, confirmatory factor analysis was performed on the indicator variables of the latent constructs. The Tucker-Lewis Index (TLI) and the relative noncentrality index (RNI) served as input to LISREL for both the measurement and structural models. The TLI and RNI for the Botswana sample II with other nations—Nigeria, Hong Kong and Canada (from Wong et al. 1996's study) are presented in Tables 2 and 4. The lists of the Chi square of the Botswana sample II and other nations are presented in Table 5. The values of the parameters of the measurement model were obtained using the method of maximum likelihood estimates. The model did not fit well in terms of the  $p$  value. LISREL statistic, however, is very sensitive to even slight departures from multi-normality of the observed variables and to sample size. A goodness-of-fit index, the

normed fit index (NFI), overcomes these limitations. Moreover, this index allows for the comparison of the data with a theoretical Null model where it is postulated that variables are independent and provide only a chance generated fit.

Close examination reveals the goodness-of-fit indices of the four a priori models the Botswana sample along with the first Nigerian sample, the two Hong Kong samples, the Canadian sample (as reported by Wong et al. 1996 study) had the highest Tucker-Lewis Index (TLI) for the three factor model.

Once again, the results with relative non-centrality index (RNI) were more consistent with Botswana sample and other nations such as Nigeria, Canada and Hong Kong having one of the highest RNI for the three factor model with orthogonality not assumed. Hence, as suggested by Wong et al. (1996). Tables 1, 2, 3 and 4 summarized the findings for the six a priori models in relation to the Null Model of hypothesized independence of constructs. Shown are the reliability indices (Cronbach alpha) of the LPQ; the relative non-centrality and Tucker-Lewis indices of various measurement models and Chi square statistic of the measurement models. These findings are consistent with the view that the Tucker-Lewis indices did not provide a good fit consistently for the data. However, a general improvement in fit as reflected by the relative non-centrality index (RNI) were obtained. This involved a fine tuning of indicators within latent variables, but no alterations in the initially hypothesized relations.

To a great extent, gender difference (reported in Tables 5 and 6) was not constant across nations—Nigeria, Australia, Hong Kong and Botswana. In Botswana, females were slightly more variable than were males. A gender main effect was particularly strong for Surface Strategy, in especially Botswana. Because the females might probably conceded using Surface reproducing learning strategy more often than their male counterparts. In addition, in Nigeria, Australia and Hong Kong—where the overall greater female variability was not so pronounced—the gender difference was not observed in utilizing Achieving Strategies.

From a comparative standpoint, this point is dramatically illustrated by our findings that, the overall greater gender variability in terms of Country main effects and interaction effects could be attributable to greater variability among same-aged Batswana and Nigerians. Interestingly, the Nigerian participants claimed to use Deeper motivational and study

**Table 1** The reliability indices (Cronbach alpha) of the Learning Process Questionnaire

Subscale	Samples						
	NIG1	NIG2	HK-1	HK-2	HK-I	BAT	CANA
SUR-MOT	0.45	0.57	0.55	0.56	0.81	0.56	0.49
DEP-MOT	0.55	0.34	0.59	0.67	0.85	0.56	0.73
ACH-MOT	0.62	0.54	0.66	0.64	0.83	0.61	0.79
SUR-STR	0.32	0.58	0.32	0.52	0.73	0.43	0.75
DEP-STR	0.58	0.49	0.66	0.66	0.84	0.37	0.51
ACH-STR	0.71	0.61	0.65	0.68	0.85	0.61	0.71

*NIG1* first Nigerian sample, *NIG2* second Nigerian sample, *HK-1* Hong Kong sample taken at the beginning of the academic year, *HK-2* Hong Kong sample taken at the end of the academic year, *HK-I* Hong Kong international school, *BAT* Botswana sample 2, *CANA* Canadian sample taken from Andrews et al's 1994 study, *SUR-MOT* Surface Motive, *DEP-MOT* Deep Motive, *ACH-MOT* Achieving Motive, *SUR-STR* Surface Strategy, *DEP-STR* Deep Strategy, *ACH-STR* Achieving Strategy

**Table 2** The relative noncentrality indices of various measurement models

Samples	Models					
	NULL	MO-ST	S + A/D	S/A + D	3-NON	3EQWT
NIG1	NA	0.84	0.84	0.92	0.93	0.34
NIG2	NA	0.70	0.73	0.67	0.66	0.65
HK-1	NA	0.24	0.57	0.67	0.77	0.31
HK-2	NA	0.57	0.73	0.71	0.85	0.35
HK-I	NA	0.84	0.86	0.95	0.94	0.43
BAT	NA	0.87	0.72	0.77	0.72	0.27
CANA	NA	0.41	0.41	0.61	0.73	0.53

*NULL* null model, *MO-ST* the two factor model of motive, strategy, *S + A/D* the two factor model of (surface + achieving), deep, *S/A + D* the two factor model of surface, (achieving + deep), *3-NON* the three factor model with orthogonality not assumed, *EQWT* the three factor model with equal weight assumed

**Table 3** The Tucker-Lewis indices of measurement desiderata

Samples	Models					
	NULL	MO-ST	S + A/D	S/A + D	3-NON	3EQWT
NIG1	NA	0.93	0.92	0.95	0.97	0.47
NIG2	NA	0.85	0.85	0.83	0.87	0.47
HK-1	NA	0.60	0.74	0.85	0.91	0.44
HK-2	NA	0.75	0.85	0.85	0.95	0.44
HK-I	NA	0.91	0.92	0.97	0.98	0.51
BAT	NA	0.82	0.62	0.71	0.72	0.46
CANA	NA	0.71	0.71	0.81	0.89	0.61

*NULL* null model, *MO-ST* the two factor model of motive, strategy, *S + A/D* the two factor model of (surface + achieving), deep, *S/A + D* the two factor model of surface, (achieving + deep), *3-NON* the three factor model with orthogonality not assumed, *EQWT* the three factor model with equal weight assumed

**Table 4** Chi squares of various measurement models

Samples	Models (degree of freedom)					
	NULL (15)	MO-ST (8)	S + A/D (8)	S/A + D (8)	3-NON (6)	3EQWT (12)
NIG1	812.14	62.51	62.23	49.25	32.91	442.32
NIG2	409.29	71.20	64.22	77.22	59.23	252.27
HK-1	461.22	188.21	122.22	86.22	44.24	257.25
HK-2	541.26	132.15	85.23	88.20	37.22	286.21
HK-I	177.05	161.42	144.21	57.22	45.28	820.22
BAT	603.10	74.11	58.21	60.21	60.02	498.01
CANA	507.18	156.23	152.29	103.88	61.20	212.24

*NULL* null model, *MO-ST* the two factor model of motive, strategy, *S + A/D* the two factor model of (surface + achieving), deep, *S/A + D* the two factor model of surface, (achieving + deep), *3-NON* the three factor model with orthogonality not assumed, *EQWT* the three factor model with equal weight assumed

**Table 5** Mean responses to Learning Process Questionnaire by country and gender

	Nigeria		Australia		Hong Kong		BOTSWANA II	
	Male	Female	Male	Female	Male	Female	Male	Female
	(n = 113)	(n = 119)	(n = 653)	(n = 713)	(n = 699)	(n = 791)	(n = 109)	(n = 123)
Surface motivation	18.38	18.79	21.48	21.42	19.81	19.67	18.41	18.21
Surface strategy	18.12	17.86	18.29	17.08	15.85	15.42	18.01	18.04
Deep motivation	21.64	21.66	19.71	19.42	19.50	18.50	19.12	19.14
Deep strategy	22.32	21.79	17.21	16.73	18.71	17.67	21.41	21.21
Achieving motivation	21.64	22.45	20.82	19.66	20.36	19.28	18.08	18.24
Achieving strategy	21.42	24.72	17.72	17.31	17.89	17.78	19.13	19.61

Nigerian, Australian and Hong Kong solutions are from Watkins and Akande (1992) and Biggs (1987, 1988), respectively



**Table 6** Summary F statistics from country and gender ANOVAs of LPQ responses

	Country (3700)	Gender (3700)	Country X Gender (3700)
Surface motivation	93.48	0.61	92.05*
Surface motivation	48.53	78.55	114.22*
Deep motivation	197.51	2.54	200.01*
Deep strategy	236.05	15.11	300.12*
Achieving motivation	101.12	12.01	123.55*
Achieving motivation	319.00	1.02	410.10*

\*  $p < 0.01$ 

strategies more often than their like-aged counterparts from Botswana. In contrast, Batswana (together with same-aged participants from Australia and Hong Kong), affirm utilizing Achieving Strategies to a less extent than their same-aged Nigerians. The magnitude of the gender difference was trivial in preference for utilizing Surface Motivation among same-aged participants from Nigeria, Australia and Hong Kong. There is no notable trends in variation in variability for Nigerian female participants by their mean response for utilizing Achieving Strategy. This is equally true for Batswana male and female participants when applying Deep Motivational strategy.

As shown in Table 5, however, there was considerable unsystematic variation in variability from country to country. There was a trivial male and female variability in utilizing Surface Motivational and Study Strategies (among Australian group) and with Hong Kong males more variable on Deep Motivation, Deep Strategy and Achieving Motivation. It is particularly noteworthy that Watkins and Akande (1994) came out with similar findings. Like Wong et al. (1996), tentative conclusion may be drawn that, the differences are primarily due to the individual countries from which data were collected.

#### 4 Limitations and Future Directions

By and large, the evidence presented here, tentatively suggest that while at least two-thirds of the LPQ items are sensitive social indicators of the a priori three factor model (Surface, Deep, and Achieving approaches to learning). On the other end, judging from the Tucker-Lewis Indices (TNIs), the construct validity of the LPQ subscales is not clear. Only some subscales appeared to fit the 'surface + achieving, deep' model better, some fitted the 'surface, achieving + deep' model better, while others got a better fit for the 'surface, deep, achieving' three factor model, in the present study. There is an apparent need for the test author to specify more clearly the construct for which the test is intended. Perhaps different subscales are required beyond the newly revised LPQ II, for reducing item redundancy (internal consistency), and for a conclusive causal relationship. This might go a long way toward improving the retest reliability.

Clearly, until all data are analyzed and a series of interrelated investigations are conducted cross-national and across sex, one will not know what the Watkins and Akande's (1994) study did show. The use of a large heterogeneous cross-national sample from a broad global population gives confidence to the results of this study. Furthermore, it opines that different dimensions can be regarded as distinct components of personal values and a quality of life tendency. Although, some further replacement of items of multifactorial nature (not done even in LPQ II) may be useful.

To this end, it is also hoped that the instrument will be soon translated into other international languages for wider usage and for the equivalence of learning across cultures. This may take care of the huge concern of using foreign questionnaires ‘developed and normed in one culture and then used in another culture’, (Byrne 2010, p. 30).

Furthermore, following Huntley and Davis’s (1983) position, we posit that the data presented here serve as evidence that, there is a ‘unique nucleus or core of individual values in learning strategies’ that is to a certain degree consistent and relatively permanent in a man or woman’s well-being and quality of life. Additional research used to explore comparisons between independent-based cultures and interdependent-based cultures are also important when the research question addresses examination of gender differences in learning models. There is a great paucity of data on gender differences in learning styles and approaches to learning. However, it remains to be established if any such differences in variability do really exist. And, if they do, what are the practical consequences and theoretical implications of such variations to the learners and their well-being (Hong and Lin-Siegler 2012; Manolom and Promphakping 2015). Overall, individual’s personal learning style regardless of it meeting the criteria set for the conceptual model should be identified, more so, when students know they are valued. That elevates both their sense of well-being and their ultimate quality of life (Michalos et al. 2011). Individual difference perspective is also crucial to the measurement of the extent to which students endorse different approaches to learning in relationship to their well-being. We maintain that culture and gender interact to govern the relationship between individuals’ approaches to learning, and their well-being and quality of life.

If one extends this reasoning, it would be good to increase resources in learning, so as to develop reliable data on social indicators of well-being and quality of life for human species, especially in broader social policy arena, where indicators or statistical markers are grossly under-utilized. Rather than playing hedgehog’s persistence against the cunning fox, we need to conjoin the analysis of differences in skills with a summary view of personal dispositions to help advance the frontier of learning (Gould 2003).

Taken together, this investigation permits further suggestions that such efforts will help avoid misuse of social indicators and develop and track measures of positive development that could help man and woman do well in life. Such an integration will be feasible and informative for future work in this area. And is consistent with theoretical frameworks presented by Akande (1998), Bergami and Bagozzi (2000), Boyle (1986), Gill (2009), Michalos et al. (2012) and Watkins and Akande (1994).

## 5 Conclusion

In sum, our results enhance the generalizability of our findings and provide confidence to future researchers in conducting cross-cultural research in under-researched areas of the developing world. Specifically, it is our hope, however, that this research will act as a springboard to further clear some new paths to our universal understanding of wellbeing in learning across sex and cross-culturally. Learning is an active process, but we must bear in mind, that well-being is a contentious phenomenon, and its related measurements are socio-culturally sensitive (Tang et al. 2016). How can biases against females be overcome in education? Whereas the human perspective to companionable learning should be concerned about individual’s right to happiness and well-being. Learning at school is either well-being development or well-being stress (cf. Hawking 2015). When it is the latter, this,

in turn, hinders or shackles the process of learning toward positive regard for learning, receptivity and learning virtues (Li 2016).

Learning means no boundaries, no borders, but approaches to learning have huge effects on and determine the quality of the learning outcomes. The assumption ‘if one goes up the other must come down’ may be likely than not and isn’t definitive but certainly possible.

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## Appendix

Descriptions of approaches to learning/models of learning styles

LPQ Scales	Description
<b>Surface Approach</b>	
Surface Motive (EXTRINSIC)	Motive is utilitarian: main aim is to gain qualifications at minimum allowable standard
Surface Strategy	Strategy is to reproduce bare essentials using rote learning
<b>Deep Approach</b>	
Deep Motive (INTRINSIC)	Motive is interest in subject and its related areas
Deep Strategy	Strategy is to understand what is to be learnt through widely inter-relating ideas and reading
<b>Achieving or Strategic Approach</b>	
Achievement Motive	Motivation is to compete for highest possible grades
Achievement Strategy effort (study skills).	Strategy is to optimize organization of time and effort (study skills).

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