Il ruolo dell'ergonomia nella didattica del design

Fiammetta Costa_ Docente alla Scuola del Design_Politecnico di Milano
Giorgio Buratti_ European Ergonomist

Il ruolo dell'ergonomia nella didattica del design può essere inteso a partire dalle seguenti definizioni di Disegno industriale, Ergonomia e User centred design.
Il disegno industriale "ha il compito di progettare la forma dei prodotti fabbricati industrialmente…" (Maldonado T., *Disegno industriale: un riesame*, Feltrinelli, 1991)

L'Ergonomia come "studio delle caratteristiche dell'uomo e applicazione di tali conoscenze per migliorare l'interazione delle persone con gli oggetti e con gli ambienti" (Wilson & Corlett, *Evaluation of Human Work*, Taylor & Francis, 1995)

Lo User Centred Design quale "pratica di realizzare prodotti che possano essere utilizzati dagli utenti per l'uso, le operazioni e i compiti richiesti con la massima efficienza e il minimo stress fisico e mentale" Woodson W.E., *Human Factors Design Handbook,* McGrow-Hill, 1981)

In questo contesto il contributo fondamentale dell'ergonomia nella progettazione di prodotto si esplica sia nello sviluppo del concept attraverso l'analisi delle caratteristiche e dei comportamenti dell'utente, sia nella fase di dimensionamento e prototipazione applicando i parametri antropometrici ed eseguendo prove con utente.

TITOLO

Il ruolo dell'ergonomia nella didattica del design

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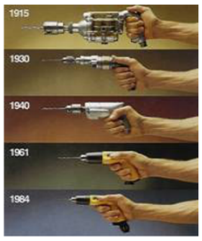
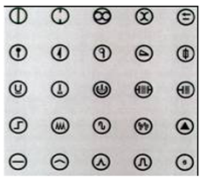
UCD> definizione

Disegno industriale

Ergonomia

User Centred Design





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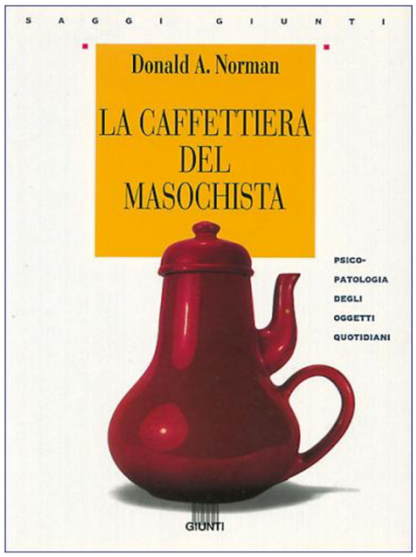
UCD> product design



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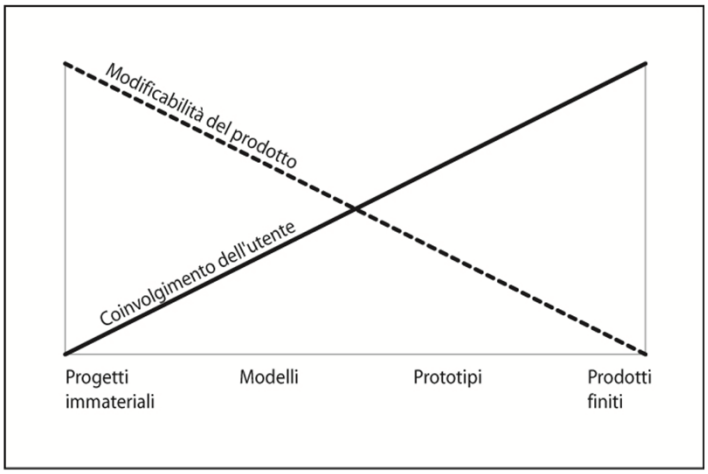
UCD> Utenti e processo progettuale



Bandini Buti, L., Progettazione ergonomia di prodotti, in Società Italiana di Ergonomia, L'ergonomia nella società dell'informazione. VII Congresso Nazionale, Firenze, 2001

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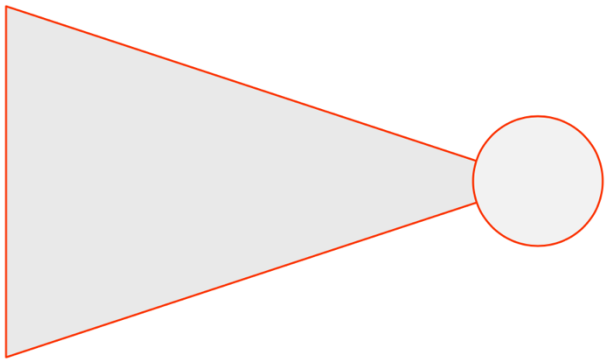
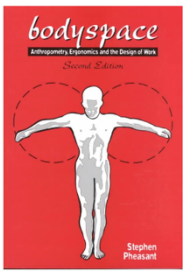
Laboratorio di sintesi finale: ricerca, analisi e sviluppo ergonomico



Analisi di mercato
Antropometria
Prove con utenti
....

Fiammetta Costa-Giorgio Buratti

Caratteristiche degli utenti: Caso studio Turner



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Fellowship Forums

Mismatch of classroom furniture and student body dimensions: Empirical findings and health implications

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Abstract

Purpose: To examine possible mismatch between the individual body dimensions of students and the classroom furniture they use.

Methods: A total of 74 (37 male and 37 female) sixth- through eighth-grade students in a Michigan school district participated in the study; their ages ranged from 10 years, 11 months to 14 years, 3 months. Anthropometric measurements (including elbow height, shoulder height, upper arm length, knee height, popliteal height, buttock-popliteal length, and stature) were gathered in several physical education classes, each during a single session. In addition, the furniture dimensions were measured for three styles of chairs and three styles of desks prevalent in the students' classrooms. Based on both the information about student body dimensions and furniture dimensions, measures of fit or mismatch were constructed.

Results: The data indicate a substantial degree of mismatch between the students' bodily dimensions and the classroom furniture available to them. Fewer than 20% of students can find acceptable chair/desk combinations. Most students are sitting in chairs with seats that are too high or too deep and at desks that are too high. Even after controlling for body stature, girls are less likely to find fitting chairs.

Conclusions: Based on the evidence presented, many sixth through eighth graders must endure seating arrangements in their classrooms that are not conducive to learning.

Studies in Higher Education Volume 27, No. 1, 2002

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University Students' Perceptions of the Learning Environment and Academic Outcomes: implications for theory and practice

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ABSTRACT *The relationship between university students' perceptions of their academic environment, their approaches to study, and academic outcomes was investigated at both university and faculty levels. The responses of a large, cross-disciplinary sample of undergraduate students were analysed using higher order path and regression analyses, and the results confirmed students' perceptions as influencing both 'hard' (academic achievement) and 'soft' (satisfaction, development of key skills) learning outcomes, both directly and mediated through their approaches to study. Perceptions of heavy workload and inappropriate assessment influenced students towards surface, and perceptions of good teaching towards deep, approaches to study. Students' perceptions of their current learning environment were a stronger predictor of learning outcomes at university than prior achievement at school. Protocols are proposed to guide more fine-grained analysis of students' perceptions.*

This article seeks to make both a theoretical and practical contribution to the literature regarding the nature and impact of university students' perceptions of an academic environment on their learning approaches and outcomes. We will argue that the clarity and generalisability of previous research investigating the association between presage factors in a university learning environment and students' approaches to learning in that environment are limited by a number of methodological issues in the areas of measurement of constructs, sampling and statistical analyses employed. The present study seeks, firstly, to address these, and to test further the relationships between characteristics of the academic environment, students' approaches to learning and the outcomes achieved, both in the context of specific faculties and at the level of the individual student. Secondly, we will report on the practical application of findings to teaching practice, and the development of specific protocols to elaborate the specific nature of students' perceptions of aspects of their academic environments.

Does the type of academic environment within which students are asked to learn (e.g. workload, teaching quality) have any real impact on how they approach their learning and the quality of the outcomes they are able to achieve? Or will students 'do well' and 'not so well' irrespective of their environments? Such questions are not just theoretically interesting, but also practically significant for university educators seeking to understand the impact of their course design decisions on students' perceptions and behaviour.

Research efforts addressing the impact of students' perceptions can be readily framed within Biggs's (1989) 3P model, which conceptualises the learning process as an interacting

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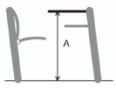
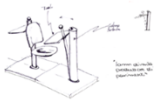
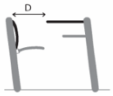
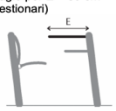
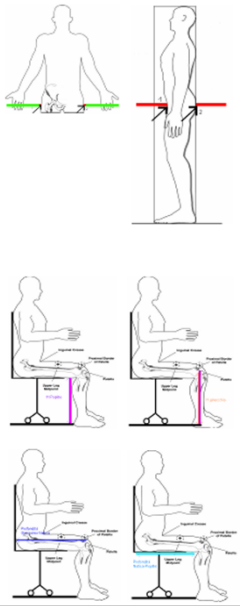
Dall'analisi del comportamento al concept: Caso studio Turner

Problematiche legate alla configurazione della postazione				
Problema osservato	Causa determinate	Soluzione teorica	Soluzione esistente	Idee progettuali
Postura curva in avanti per scrivere 	Piano troppo basso o	Regolazione 75 < A < 85 cm 		
	Piano troppo lontano	40 > D > 33 cm (profondità max corpo per 95%ile uomo + 7 cm spazio) Disagi per D > 50 cm (questionari)  movimento del sedile in avanti con inclinazione di 15°		Piano scorrevole
Torsione del tronco  Gomito appoggiato sul ginocchio 	Impossibilità di appoggiare i gomiti vicino	Braccioli Avvicinamento e aumento profondità piano Disagio per E < 30 cm (questionari) 	Tavolino girevole p.es. F300 (Lamm) 	

Antropometria: Caso studio Turner

		Percentili Femmine					Percentili Maschi				
	Misure	**5°**	**25°**	**50°**	**75°**	**95°**	**5°**	**25°**	**50°**	**75°**	**95°**
1	Statura	159,6	163,0	168,0	174,0	175,9	173,0	176,0	180,0	185,0	190,0
2	Peso	46,0	52,0	57,0	61,0	70,8	65,0	68,0	75,0	80,0	87,0
3	Altezza spalle	129,3	135,0	139,0	144,0	146,8	141,0	145,5	150,0	154,0	167,0
4	Altezza anca/fianchi	88,0	92,0	94,0	98,0	103,8	92,0	97,0	99,0	102,0	105,0
5	Larghezza anche	32,0	34,0	37,0	38,0	41,6	34,0	36,0	37,0	39,0	40,0
6	Spessore anche	19,0	21,0	22,0	24,0	27,0	20,0	22,0	23,0	25,0	29,6
7	Altezza schelica	124,6	127,5	130,0	134,0	137,0	130,5	135,0	139,0	141,5	144,0
8	Altezza degli occhi	113,0	116,5	120,0	122,0	126,8	120,0	123,0	127,0	130,0	133,8
9	Altezza spalle	97,0	100,0	103,0	105,0	109,5	102,0	105,0	109,0	113,0	115,0
10	Altezza del gomito	19,0	22,0	24,0	26,0	29,0	20,5	22,0	24,0	28,0	30,0
11	Spessore coscia	9,6	10,0	11,0	12,0	13,0	11,0	12,0	13,0	14,0	16,4
12	Altezza ginocchio	49,0	50,0	52,0	54,0	56,0	52,2	55,0	56,0	58,0	60,0
13	Altezza poplitea	43,0	44,0	45,5	47,0	48,8	46,0	47,0	49,0	50,0	52,8
14	Distanza spalla-gomito	27,2	29,0	30,0	32,0	34,0	31,0	32,0	34,0	35,0	36,0
15	Lunghezza gomito-punta delle dita	39,0	40,0	42,0	44,0	45,0	42,0	44,0	46,0	48,0	49,0
16	Lunghezza gomito-polso	22,0	22,0	24,0	25,0	27,0	23,0	25,0	27,0	28,0	30,0
17	Profondità ginocchio-natica	55,1	57,0	59,0	61,0	64,0	60,1	61,0	62,0	64,0	69,0
18	Profondità natica-poplite	47,0	49,0	51,0	53,0	55,0	48,0	52,0	53,0	55,0	59,0
19	Larghezza biacromiale	37,4	40,0	41,0	43,0	45,8	42,0	45,0	48,0	49,0	52,0
20	Larghezza bideltoide	30,0	31,0	33,0	36,0	38,8	35,0	36,0	39,0	41,0	43,8
21	Larghezza bitrocanterica	38,2	39,5	42,0	43,0	45,9	39,2	42,0	43,0	45,0	47,4
22	Altezza regione lombare	12,2	16,0	18,0	23,0	25,0	14,2	16,0	18,0	22,0	24,0
23	Incavo lombare	5,0	5,5	6,5	7,0	8,0	4,0	5,0	5,5	6,0	7,5

Tab 15: Confronto in base al sesso. Percentili maschili e femminili dei tre gruppi di studenti.



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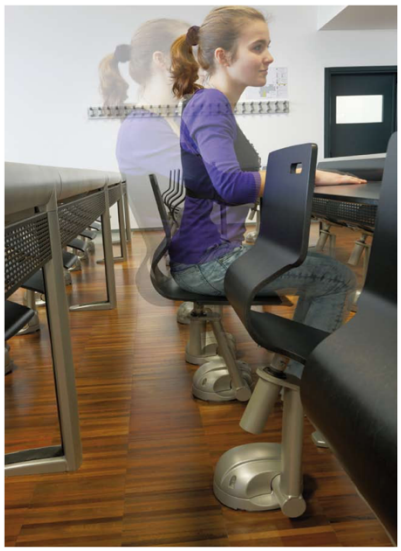
Prototipazione e prove con utente: Caso studio Turner



Fiammetta Costa-Giorgio Buratti

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